

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

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DIARY OF FORTHCOMING EVENTS.

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

- June 22 ... Wilbur Wright Memorial Lecture, H.R.H. Prince Albert presiding, at 8.30 p.m., at Central Hall, Westminster. Commander J. C. Hunsaker will read a paper on "Naval Architecture in Aeronautics"
- July 3 ... Air Tournament at London Aerodrome, Hendon, in Aid of R.A.F. Memorial Fund
- July 9 to 20 ... S.B.A.C. International Aero Exhibition at Olympia
- July 17 to 31 ... Seaplane Contests at Antwerp
- July 24 ... Aerial Derby at Hendon
- Aug. 3 ... Air Ministry Competition (Large and Small Type Aeroplanes)
- Aug. 28 & 29 ... Schneider International Race, Venice
- Sept. 1 ... Air Ministry Competition (Seaplanes)
- Sept. ... International aviation week (with competitions) at Brescia, Italy
- Sept. 27 to Oct. 2 ... Gordon-Bennett Aviation Cup, France
- Oct. 23 ... Gordon-Bennett Balloon Race, Indianapolis, U.S.A.

EDITORIAL COMMENT



A meeting held recently at the Central Hall, Westminster, resolutions were passed calling for the status of a University, with its powers of granting degrees, to be conferred upon the Imperial College of Science and Technology. At first sight this appears to be a rather startling proposal, the more so as there already exists in London an institution with all the status and powers now asked for on behalf of the College, viz., the University of London. On examination, however, it begins to emerge that the College is in fact asking for nothing more than that to which it is, by the character and scope of its work, justly entitled. It is possible to go even farther than this, and to say that the time has long passed when the facilities and powers common to Universities should have been conferred upon the Imperial College. Science and technology have become so essentially a part of industrial progress—and it is by that progress that the Empire continues to exist—that an institution which is solely devoted to these subjects, which is suitably equipped and staffed, and has the status of a University with the power to confer degrees, is absolutely necessary for the advancement of British science, and thus of British industry.

The work of the College is too well known to those associated with science to need elaboration. It may be mentioned in passing, however, that the Imperial College of Science and Technology, which was founded by Royal Charter in 1907, includes as integral parts of its organisation the Royal College of Science, the Royal School of Mines, and the City and Guilds (Engineering) College. The standard of education laid down by the College authorities is admitted to be equal to the "honours" standard at the Universities, yet the College is only able to grant diplomas to its students. It is claimed that this has resulted in overseas students, whom the College was designed to attract, preferring to study at foreign institutions, solely devoted to science and technology, which possess the degree-conferring power. It is perfectly obvious that the graduate holding a degree must possess a distinct advantage over the one who has nothing to show for his studies but a mere diploma.

when the question of appointments arises. The authorities of the College contend, with considerable force, that British science and technology can only be recognised at their true national values, the scientific and technological professions can only be granted their well-merited distinctions, by Government acknowledgment of the fact that the greatest individual institution in the Empire which is solely devoted to these twin subjects is worthy of University status.

We confess we are not at all clear why this status has not been conferred, or where the opposition—for it is certain there is a considerable body of opinion opposed to the granting of the facilities demanded—comes from. It does, however, seem certain that the College has a very strong claim. Science and technology have a far greater bearing on the welfare of the nation than the study of the classics, and from the point of view which this carries we had far rather see the Imperial College given what it asks than that the older Universities, which have really done comparatively little for industrial science, should retain their present monopoly of granting distinctions for educational attainments. The College has made out an almost unanswerable case, and it will be interesting to see what developments follow.

The State and Aviation

In a recent issue of *The Times*, Mr. H. V. Roe affects to be very much at variance with Mr. Holt Thomas in his insistence upon the necessity for a measure of State support for aviation. He says that in essence what the industry is asking for is to be so endowed by the Government as to be well secured from the strenuous days so well known before the War, when aviation had to fight its battle unassisted. The chief point, he says, for the Government to remember is that if an industry cries for help, the Government can safely decide that that industry, at any rate, is not healthy enough to look after itself, and most certainly is not vital enough to benefit by Government support.

We cannot help thinking that Mr. Roe misses the real point of discussion. Neither Mr. Holt Thomas nor anyone else who has taken a prominent part in urging that State aid should be extended to aviation has advocated the policy from the point of view of bolstering up an industry for the benefit of those who form it. It would be just as logical to ask for State aid for the makers of lead soldiers because they feel the pinch of foreign competition. The advocacy of Government aid for aviation is based on much broader premises than the support of an industry which, created during the War for the purposes of the War, has now, with the coming of peace, fallen on evil days—comparatively speaking. It is because the War has shown that the defence, the very existence of the Empire, may depend in the future—and quite possibly in the near future—on our possession of a strong and instantly ready aerial arm. The natural progress of commercial aviation must, unassisted, be slow, and not at all in proper relation to our needs of defence. To maintain an active Air Force of the size we might quite conceivably need some day would cost a considerable annual sum, but this, it is claimed, can be greatly modified and still be effective by a far better and less costly way out. There can be no two opinions as to the need for being prepared in the air. The necessity has been admitted by every authority who has given it a thought.

The only question that needs decision, therefore, is as to the best method of securing adequate defence at a minimum cost. Obviously, it is by the careful fostering of civil flying and by the expenditure of a certain amount of State money in order to make progress more rapid than it could be unaided and thus rapidly to build up the strong reserve to the active Air Force which is essential. For our own part, we have not the smallest doubt about the future of commercial aviation, and if it were not for the urgent need of preparedness to defend our shores and the integrity of the Empire we should be as much against what Mr. Roe calls the spoon-feeding of the industry as he himself. But, because we regard the broader issues as we submit they should be regarded, we think he is wrong and that Mr. Holt Thomas is distinctly right.

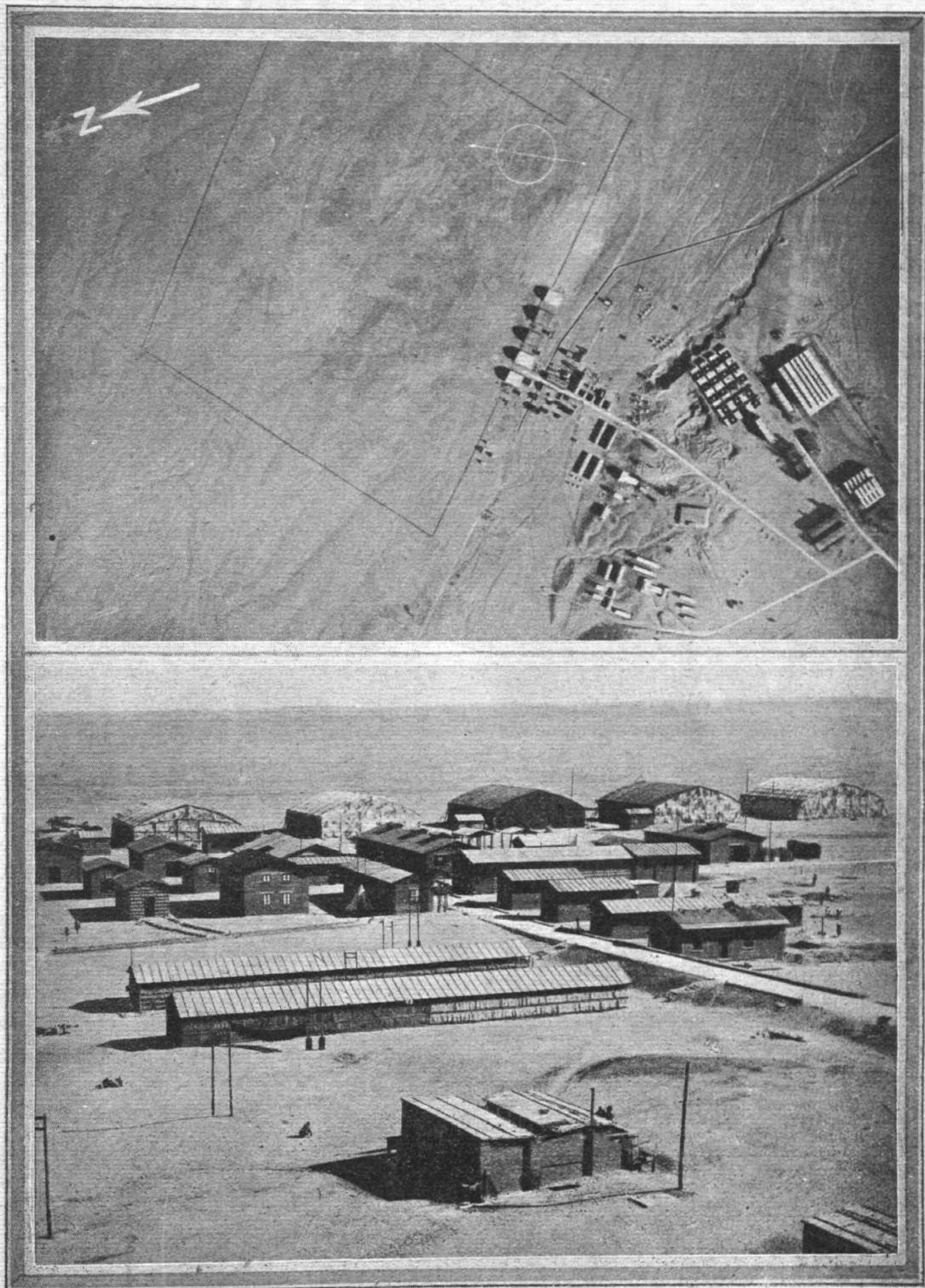
The Air League

Last week's inaugural meeting of the Air League of the British Empire has at least given us an earnest of the influence such a body, properly organised and directed, may be expected to wield. It certainly had what is known as a "good Press." Practically the whole of the great dailies devoted leading articles to the subject of air power and the objects of the League, demonstrating that there is a vast amount of interest felt in the future of aviation, civil and military, and that the necessity for intelligent direction of its activities is fully appreciated.

Reading through the comments on the meeting, it is impossible to avoid the conviction that the movement for splitting the Air Service and reverting to the bad old duplication existing before 1918 is still strong. The *Telegraph*, for example, predicates that the weight of opinion in the Navy and Army is against the theory of the separate Service. Both soldiers and sailors of experience, it says, claim that whatever independent sphere of activity aircraft may have, the aeroplane and the airship are extensions of the power of navies and armies. Many officers of the sea and land forces view with considerable anxiety any development which might lead to want of unity in the command of the forces under their orders, especially as the needs in respect of aircraft of the naval and military arms are by no means identical.

We are not wholly able to follow the line of argument. We can fully appreciate the point of view of the naval or military commander who is anxious that there should be no want of unity of command, but we are quite at a loss to see where, under the present scheme of organisation, such want of unity could arise. It has been made perfectly clear that units of the Air Force attached to naval or military forces and working with them are at all times under the orders of the commander-in-chief or of the officer delegated by him. It would be as logical to fear want of unity of command because of the appointment of an officer to be C.R.A., or, to take an even better analogy, because a naval contingent under a naval officer were landed to co-operate with a military force. We are not aware that "unity of command" suffered under these circumstances in South Africa or China, where strong naval contingents under their own officers were brigaded with the military forces. The Great War gave us many examples of the same kind, and we have never heard that there was the slightest difficulty of the kind apparently feared. If this is so—as it is—why should there be any greater difficulty in the case of Air Force units operating with naval or military forces? We confess we do not know.

The Camera and the 'Plane



ALMAZA AERODROME, HELIOPOLIS, EGYPT : An aerial and ground view of this aerodrome, where the late Air-Commodore R. M. Groves, C.B., and Flying Officer C. O. Bird were recently killed. During the War this aerodrome was the Artillery Observation School for the Middle East Brigade. Note the marked-out "Square" when seen from the air

Again, with regard to the contention that aircraft are merely extensions of the power of navies and armies. This seems to us to be a very limited argument indeed. As a matter of fact, it is exceedingly thin. It is doubtless true in a measure, but by parity of reasoning we should be equally justified in holding that, in the case of an Empire like our own, which is based primarily on sea-power, the Army is simply an extension of the power of the Navy, to be used under the directions of the naval authorities to complete on land the work begun by the fleet at sea. This is obviously an absurd and extreme standpoint to adopt seriously, and if it were put forward in all seriousness it would be promptly and properly laughed out of court—because the functions of fleets and armies as such are so well understood and generally appreciated. It is only because, however, the strategic functions of air power are not so well understood that such equally extreme arguments are allowed expression. During the war it was demonstrated beyond all question that air power, in common with all plans for the military defeat of an enemy, has two separate and distinct aspects. It can assist in that defeat either in combination with either or both the other recognised Services or by its own unsupported action. How far the latter can come to being decisive we saw in such a comparatively trifling affair as the last Somaliland campaign, in which air power secured a decision in almost as many days as the Army had spent years in trying to effect without success. As a matter of fact, we do not know yet precisely how far along the road to a decision air power alone can carry us. A great deal, of course, depends upon the character of the operations involved and the character of the opposition. But whatever these may be we do know enough to be certain that air power and a separate and unified Air Force is as essential to the safety of the Empire as a correspondingly powerful Navy. Nor need there be any question of starving the other Services to secure it. Their full require-

ments in aircraft and *personnel* must and can be met without weakening the striking power of the main Air Force, whose rôle is strategic. To our way of thinking the need for keeping the Air Force clear of the reactionary influences of the Admiralty and the War Office is as strong, or stronger than ever.

Air Transport Charges

The success of the London-Paris air services has been such that the operating companies have been enabled recently to announce that the charges for passengers and goods are to be considerably reduced. It is possible now to travel by air from London to Paris for 10 guineas, or 18 guineas for the double journey. For goods the rates are: Parcels up to 10 lbs., 2s. per lb.; up to 30 lbs., 1s. 9d. per lb.; up to 100 lbs., 1s. 6d. per lb.; and over 100 lbs., 1s. 3d. per lb.

This is indeed progress, nor need there be any question that these greatly reduced rates are anywhere near final. In the future, and as aerial transport grows, they will come down still more until the aeroplane will not only, as now, surpass in speed but will compare in actual cost with the older forms of transit with which it is in competition. One question which must inevitably be asked in connection with this matter of reduced rates is of how the Post Office proposes to justify its present extortionate charge per ounce for conveyance of letters by air between England and the French capital. We have always argued that it would be perfectly possible to make the mail service pay handsomely on a charge of 6d. an ounce for mail matter, and that such a comparatively low charge would induce the business community to take full advantage of the facilities offered. If the Post Office is sincerely desirous of assisting both the aircraft industry and the business of the country, it will at once set about a revision of its rates, which are far too high to be justified, even by a public department.

Sir H. Trenchard to be Married

ALL who have followed the progress of the Royal Air Force and know how much it owes to the wonderful leadership of the "C.A.S." will be more than interested in the announcement that a marriage has been arranged, and will take place on July 17, between Air-Marshal Sir Hugh M. Trenchard, Baronet, K.C.B., D.S.O., Chief of the Air Staff, Hon. Maj.-Gen. in the Army and Col. of the Royal Scots Fusiliers, and Katherine, widow of Captain the Hon. James Boyle, Royal Scots Fusiliers.

1,000 Mile Trip by "R 33"

LATE in the evening of June 8 the "R 33" returned to her station after an instructional cruise of about a thousand miles, which practically embraced the whole of England except the extreme southern parts.

The vessel was in the air 24 hours. When she left Howden she turned north, crossing the coast line at Scarborough. Passing over the North Sea she came in again near the Tyne, crossing Barrow and Newcastle. Then she went north again, but before reaching Edinburgh veered southward, and passed over Manchester and Liverpool, across Cheshire, and on to Birmingham, Leamington, Bedford, and Pulham, after which she took the east coast route back to Howden.

R.A.F. Reunions

Seaplane Squadron No. 8, R.N.A.S., German East Africa, 1916-1918.—A reunion dinner will be held at the Holborn Restaurant (corner of Kingsway) on Friday, June 25, at 7 p.m.

It is hoped that all officers and men who served with this squadron will attend. Mufti. Tickets (10s. 6d.) from Capt. C. S. Thompson, Orient House, 42-45, New Broad Street, London, E.C.2.

No. 2 Squadron, R.A.F.—It is proposed to hold a reunion dinner in the autumn. The hon. sec. (J. O. Comber, Ashenhurst, Guildford) will be glad to hear from any interested.

Raid on Turkish Aeroplane Park

ON the forenoon of June 8, several Turkish flying officers, accompanied by cadets of the School of Aviation and several soldiers of the Air Force, entered the Aviation Park of Maltepe, some 12 miles east of Scutari, and tried to start the engines of seven aeroplanes parked there in conformity with the Armistice, reports *The Times* correspondent at Constantinople.

"According to information from a Turkish official source three machines which could not be started were damaged by the officers. Four or five of the officers, one of whom was accompanied by his wife, then attempted to escape on the other four machines to the Nationalist lines about 30 miles away. One machine promptly crashed, and the pilot was seriously injured, two descended apparently through inefficiency of the pilots west of Ismid, and the occupants were arrested, the fourth disappeared into Nationalist territory. It is strange that no precautions had been taken by the authorities responsible for the enforcement of the Armistice terms against such an attempt."

A Record Weather Balloon Ascent

SOMEWHAT of a record, for this country, at any rate, was created on June 9, when a weather balloon sent up from Cranwell, Lincolnshire, was kept under observation continuously until it reached the altitude of 110,000 ft. or 20½ miles. It was only at the highest point observed that the wind attained the force of a gale.

A High Climbing Test

AN interesting test was carried out by Lieut. Casale at St. Cyr recently by way of preparing for an attack on the altitude record. Entering an insulated cylindrical chamber, the air was gradually exhausted until the atmospheric conditions, as indicated by the barograph, were similar to those at a height of 12,000 metres (39,300 feet). The "ascent" was made in 47½ mins., and the "descent" in 20 mins. Lieut. Casale started to inhale oxygen at 4,600 metres. During the experiment 1,000 litres of oxygen were consumed.

“ MILESTONES ” * THE MARTINSYDE MACHINES

AMONG the pioneer firms of British aviation is that of Messrs. Martin and Handasyde—or, as they are now styled, Martinsyde—who were among the first to settle at the little colony at Brooklands in the very earliest days of flying in this country. In those days the firm produced monoplanes exclusively, and very beautiful machines they were, with their graceful outlines which resembled those of the famous Antoinette monoplanes flown by Latham and other famous pilots of that day. It was not until about 1914 or early 1915 that Mr. Handasyde was persuaded to design a machine of the biplane type, he having always been a firm believer in the superior efficiency of the monoplane. However, he has since then provided ample proof of his ability to design biplanes also, and some of the modern Martinsyde machines are among the finest in the world. It is worthy of note that in some inexplicable way Mr. Handasyde has managed to make his biplanes quite as pleasant to the eye as were his original monoplanes, although their “eyeableness” is of a somewhat different type. For sheer beauty of outline the Martinsyde machines have never been surpassed, and the remarkable thing is that on analysing the designs one finds that this grace of outline is obtained, not by fine flowing curves, but by a series of straight lines forming broken curves. It is, we believe, a fact that artists obtain greater strength and more dignity in their drawings by breaking up the curves of their drawings into series of short straight lines, and possibly this principle also lends strength and beauty to a solid thing like an aeroplane.

* All the scale diagrams of the “Milestones” series are to a uniform scale, and are thus immediately comparable as regards relative size. Previous instalments in this series appeared as follows: Airco, January 9, 1919; Bristol, January 23, 1919; Sopwith, February 6, 1919; Avro, March 20, 1919; Armstrong-Whitworth, April 3, 1919; Vickers, June 12, 1919; Sage, July 24, 1919; Blackburn, December 11, 1919.

The S.1. (1915)

The first Martinsyde machine to be built for war purposes was a small scout with 80 h.p. Gnome engine. This machine became known as the S.1, and was supplied throughout the year 1915. In the accompanying drawings and photograph the machine is shown with a Vee undercarriage, but the first few models were fitted with a four-wheeled chassis of great strength. On several occasions this form of undercarriage was proved enormously strong, but



The Martinsyde S.1, 80 h.p. Gnome engine

as it necessarily reduced the speed somewhat it was soon discarded in favour of the usual Vee undercarriage, which was found quite sufficient for all normal requirements. The S.1, as will be seen from the table of performances, had a very good turn of speed, which was thought more of in those days than climb and other considerations. Her manoeuvrability was also very good, and especially was she a very fine looper.

The G.100 (the “Elephant”). (1915)

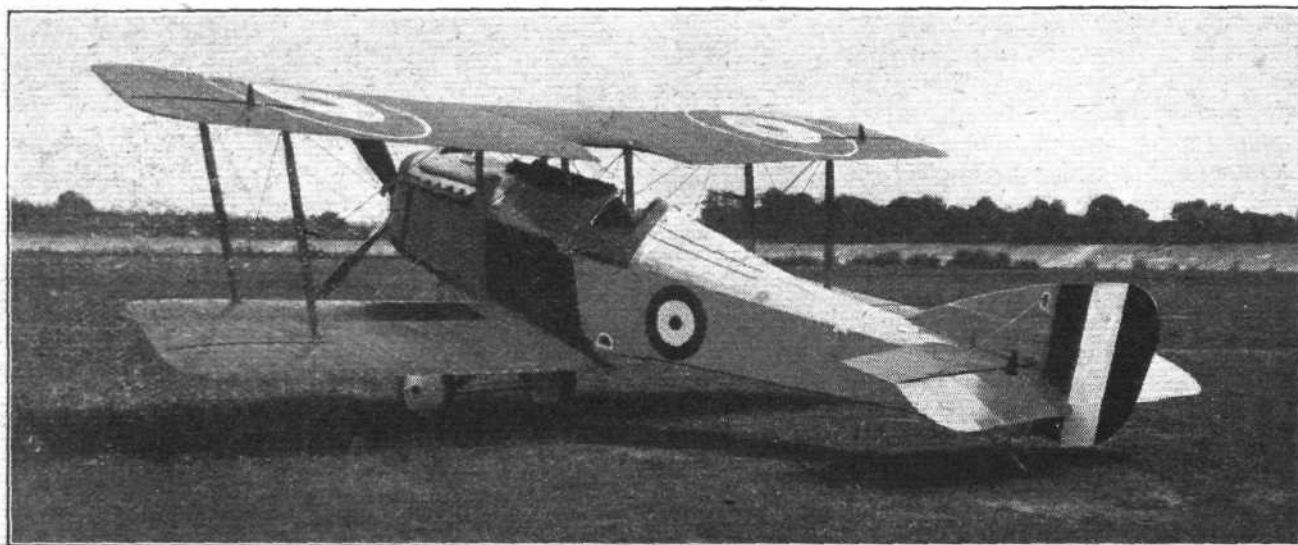
The next machine to be designed and built (during the summer of 1915) was a single-seater long-distance



The Martinsyde G.100, 160 h.p. Beardmore engine

scout, fitted with water-cooled Beardmore engines. In some instances the engine was a 120 h.p. and in others a 160. The machine, which was affectionately known in the Service as the "Elephant," is really typical of Martinsyde design, and was supplied to the Government in large quantities. The performance was quite out of the ordinary for those days, the speed being 102 m.p.h. at 6,000 ft., and even at 14,000 ft. the speed was still as high as 90 m.p.h. The climb to 10,000 ft. took 15 minutes only, which was a performance to be proud of at that time. Although a single-seater, the machine had a large wing area, which enabled her to carry fuel for a 4½ hours' flight, and she was one of the few machines which could successfully carry the large

machine was fitted with a 190 h.p. Rolls-Royce engine. Although retaining the unmistakable Martinsyde appearance, this machine was altered in several respects compared with the "Elephant." For instance, the radiator, which in the G.100 was placed behind the engine, was in the new machine placed in the nose, car fashion. Also the deck of the fuselage was considerably higher, especially behind the pilot. Two machine-guns were mounted on top of the deck for'ard, and were operated by synchronising gear. The machine passed its official tests at Farnborough in February, 1917. Considering the date—early 1917—her performance was most excellent. At ground level the speed was 130 m.p.h., at 10,000 ft. 122 m.p.h. while at 18,000 ft.



The Martinsyde R.G., 190 h.p. Rolls-Royce engine

3 cwt. bombs. It might be mentioned here that "The Elephant" was used with effect against the fortifications of Bagdad and other enemy towns.

Like all Martinsyde products, the G.100 was very strongly built. By way of an instance, it may be recorded that one of them returned safely to its aerodrome with a considerable portion of its centre section destroyed by high-explosives, while on another occasion it is said that the pilot used his machine to ram his opponent. The wing tips and ailerons suffered severely, but the machine returned in safety to the aerodrome.

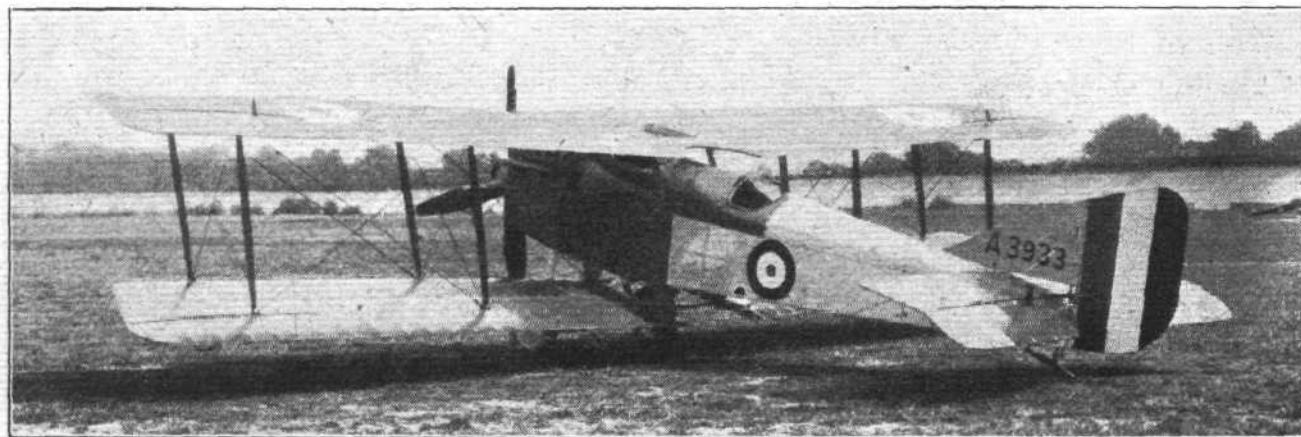
The R.G. (1916)

Towards the end of 1916 yet another type was designed and built at the Martinsyde works. This

she still did 108 m.p.h. The climb was equally good, 19,000 ft. being reached in 30 mins. 55 secs. The R.G. was used as a fast single-seater fighting scout. The manoeuvrability was excellent, and of innovations, other than those already referred to, may be mentioned the fitting of a trimming tail. The range, it will be seen, was large—585 miles.

The Martinsyde F.1. (1917)

We now come to the first of the F. series. This machine went through its tests in the summer of 1917. It was known in the works as "Father," being the first of the F. type. It was a two-seater machine, fitted with a 250 h.p. Rolls-Royce engine. The gunner sat in front and the pilot behind. The wing surface was large, nearly 600 sq. ft., and the



The Martinsyde F.1, 250 h.p. Rolls-Royce engine



The Martinsyde F.2, 200 h.p. Hispano-Suiza engine

machine had a surplus lifting capacity of about half a ton. The figures of performance given in the accompanying tables relate to the machine with this extra load on board. Unfortunately no drawings are available showing the general arrangement of "Father," but a fairly good idea may be obtained from the accompanying photograph. The main difference in general arrangement which was noticeable in this machine was the arrangement of the lower plane. Instead of attaching direct to the body, the two halves of the lower plane were carried on short stumps projecting down from the lower *longerons*, as shown in the photograph.

One would imagine that for present-day commercial use this machine would make a very good mail 'plane, there being ample room in the front cockpit, which is reached through a rectangular opening in the top centre section. This would facilitate the loading and unloading of mail bags, etc., while at the same time the speed of the machine—100 m.p.h. at 10,000 ft.—is quite sufficient for modern commercial requirements.

The F.2. (1917)

This machine, also a two-seater fighter, was an improvement on "Father," because of its increased speed and lighter construction. It was designed and built during the construction of F.1. The engine fitted was a 200 h.p. Hispano-Suiza, and

the machine carried, in addition to fuel and oil, a load of about $\frac{1}{4}$ ton. At the time of the tests the weight of the machine with full load was 2,355 lbs. The machine had a very low landing-speed, got "unstuck" after a very short run, and was very easy to fly, having a great amount of natural stability.

The F.3. (1917)

We now come to another member of the Martinsyde family, affectionately known at the works as "Mother." This was a fighting scout, and went through its tests in November 1917. As the first single-seater in the F. class, it was natural that it should be known as mother. From the table it will be seen that this machine had an extraordinarily good performance, its speed at ground-level being 142 m.p.h., while at an altitude of 16,500 ft. the speed was still 130.5 m.p.h. The figures for climb are as follows: 6,000 ft. in 3 mins. 35 secs., 10,000 ft. in 6 mins. 45 secs., 15,000 ft. in 11 mins. 55 secs., and 20,000 ft. in 24 $\frac{1}{2}$ mins. In spite of the exceptional speed of this machine, the landing-speed is only 45 m.p.h. At the same time the machine is very easy to manoeuvre and quick on the controls. It may, perhaps, be mentioned that this machine was described in an official report as "A great advance on all existing fighting scouts." From the illustrations it will be seen that the pilot is placed high in relation to the top plane, which arrangement gives



The Martinsyde F.3, 190 h.p. Rolls-Royce engine



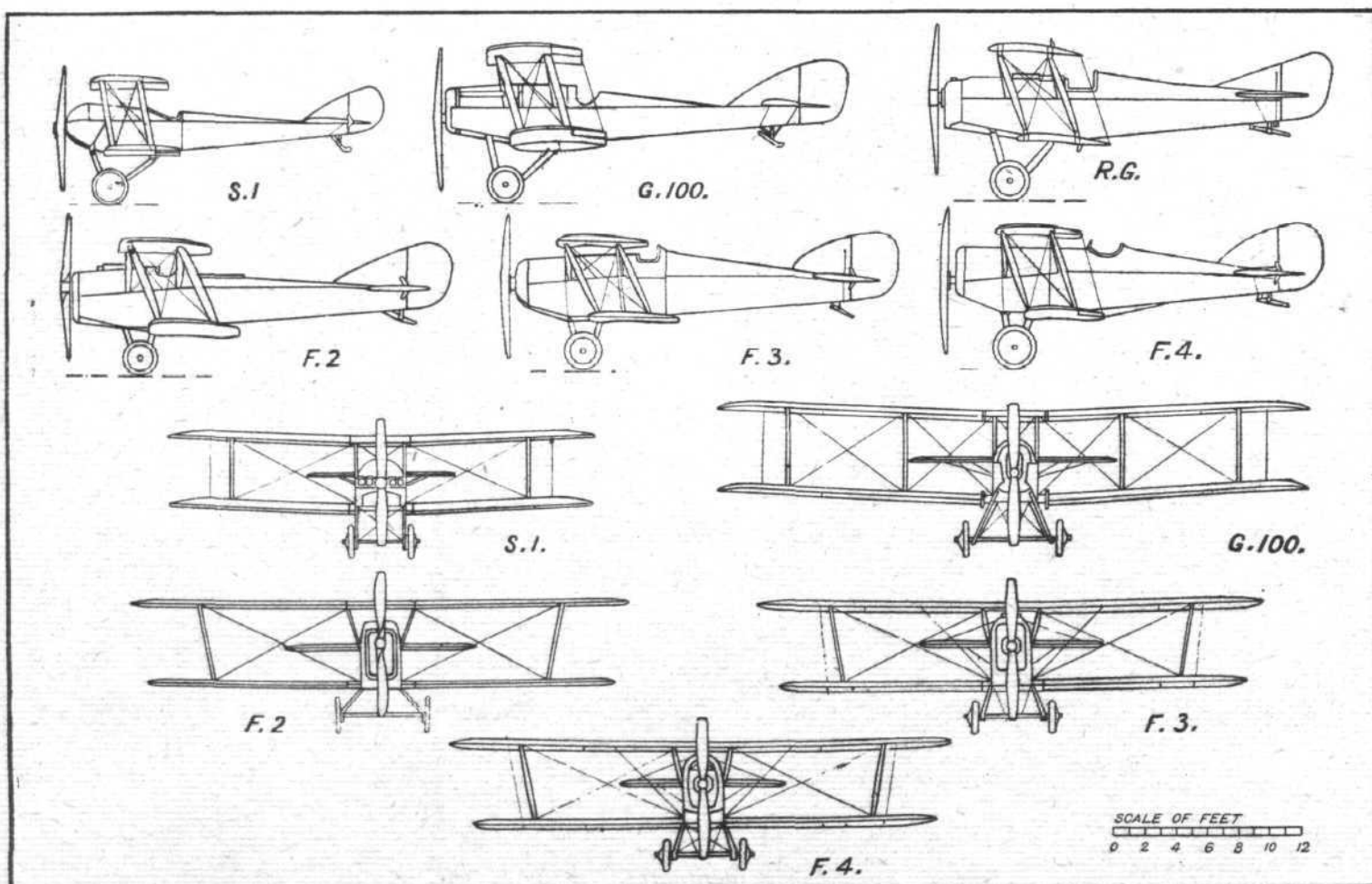
The Martinsyde F.4, 300 h.p. Hispano-Suiza engine

him an excellent view. The roof-shape of the coaming behind the pilot's head should be noted as one of the features of this machine.

The F.4. (1918)

The last of the Martinsydes to be designed and built for war purposes was the F.4, or "Buzzard," as she is commonly called. She was designed and built in 1918, and tested in June of the same year. She was designed with the purpose of beating all performances of every other machine both Allied and Enemy. But for the cessation of hostilities,

it is not to be doubted that the "Buzzard," as a military machine, would have made a world-wide reputation for herself. The machine, both as regards appearance and general performance, is, perhaps, the finest that has ever left Mr. Handasyde's drawing-board. She is fitted with a 300 h.p. Hispano-Suiza engine, which gives her a ground-level speed of 145 m.p.h., while at 15,000 ft. the speed is 134 m.p.h. The figures for climb are as follows: 6,000 ft. in 3 mins. 40 secs., 10,000 ft. in 6 mins. 40 secs., 15,000 ft. in 11 mins. 45 secs. and 20,000 ft. in 19 mins. 40 secs. In spite of this excellent speed and climb, the F.4



"MILESTONES": Side and front elevations of the Martinsyde machines

lands at only 45 m.p.h. The standard machine carries fuel for $2\frac{1}{2}$ hours flight at full speed, but by fitting a larger tank a much longer range could be obtained, while the absence of guns and other paraphernalia of war would provide still extra load

capacity, thus making the machine eminently suitable for express air mail carrying.

Since the Armistice the Martinsyde firm have produced various types, which have, however, been described in FLIGHT during the past twelvemonths.

Table of Weights, etc., and Performance of Martinsyde Machines

Type of machine.	Engine.		Weight of machine.		Fuel capacity (hours).	Range in miles.	Speed (m.p.h.)			Climb (in mins.) to			Ceiling.	Landing speed.	Load/sq. ft.	Load/h.p.	Military load.
	Type.	H.P.	Empty (lbs.).	Loaded (lbs.).			Ground level.	10,000	15,000	5,000	10,000	20,000					
S.1	Gnome	80					87										
G.100	Beardmore	160	1,793	2,458	$4\frac{1}{2}$	450	108	99.5	90	$6\frac{1}{2}$	16		19,000	40	5.99	12.9	276
R.G.	Rolls-Royce	190	1,750	2,375	$4\frac{1}{2}$	585	130	122	110	$4\frac{1}{2}$	10.3	32		40	7	12.1	
F.1	Rolls-Royce	250	2,100	3,300	$4\frac{1}{2}$	500	110	100	90	$5\frac{1}{2}$	13	30*		40	$5\frac{1}{2}$	13.1	
F.2	Hisp.-Suiza	200	1,800	2,355	3	360	120	112	107	6	$13\frac{1}{2}$	$30\frac{1}{2}$ †		40	7	11.1	
F.3	Rolls-Royce	190	1,720	2,325	$2\frac{1}{2}$	345	142	138	132‡	$3.35\frac{1}{2}$	6.45	$24\frac{1}{2}$	30,000	45	7	12.1	
F.4	Hisp.-Suiza	300	1,710	2,300	$2\frac{1}{2}$	350	145	139‡	134	$3.6\frac{1}{2}$	6.6	19.6	30,000	45	7	7.1	

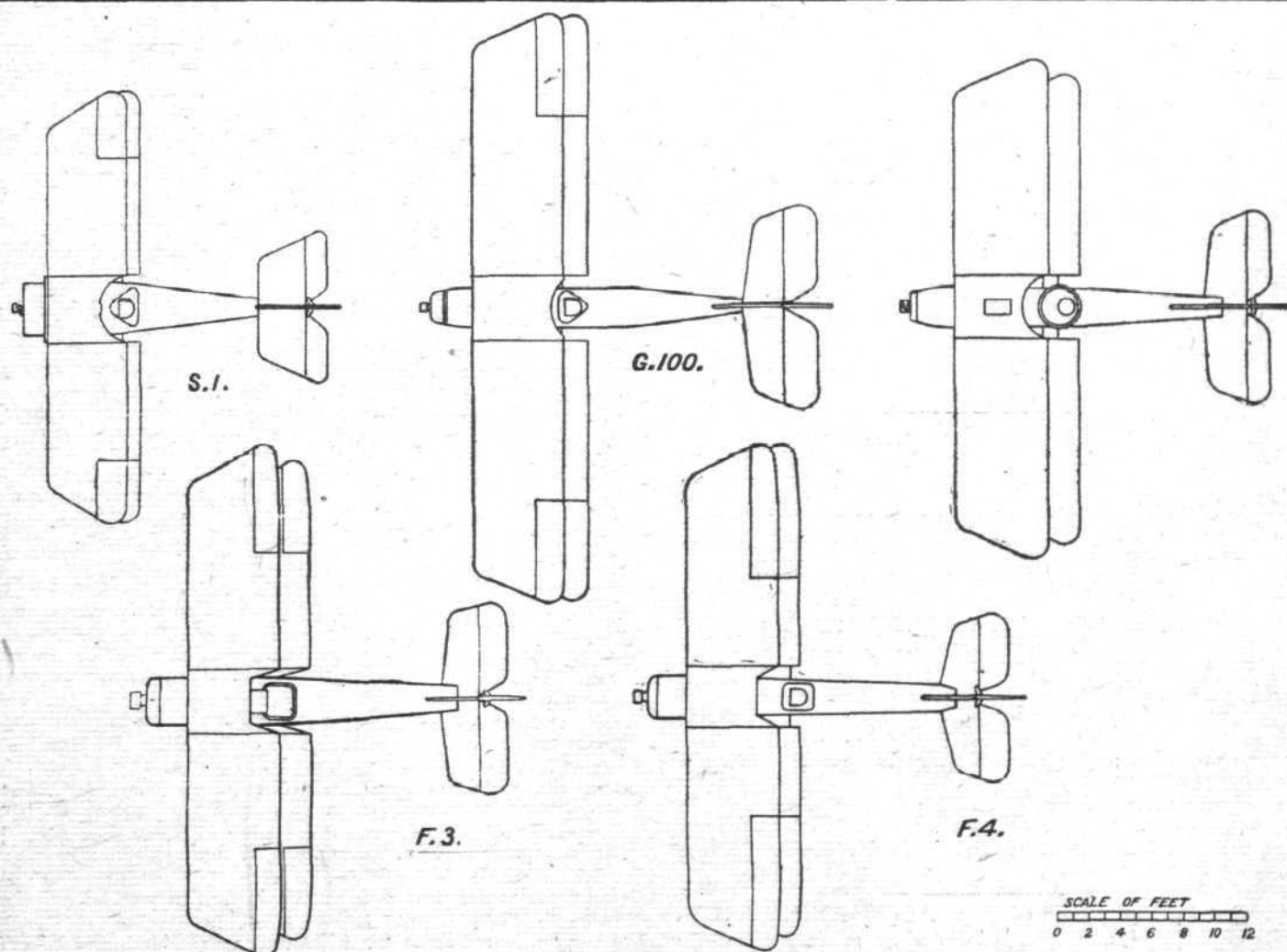
* To 15,000 ft.

† To 16,000 ft.

‡ To 6,000 ft.

Table of Dimensions of Martinsyde Machines

Type of machine.	Length o.a.	Wing span.		Wing chord.		Wing area.			Inci-dence.		Gap.	Stagger.	Sweepback.	Dihedral.		Total Aileron area.	Area.			Area.		
		Top.	Bot.	Top.	Bot.	Top.	Bot.	Total.	Top.	Bot.				Top.	Bot.		Tail-plane.	Elev-ator.	Total.	Fin.	Rudder.	Total.
S.1	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	square feet.			°	°	ft. in.	ft. in.	°	°	°	sq. ft.	square feet.			square feet.		
G.100	21 0	27 8	27 8	4 9	4 9	140	140	280	$2\frac{1}{2}$	$2\frac{1}{2}$	4 6	0 10	—	$2\frac{1}{2}$	$2\frac{1}{2}$	28	20	13	33	$2\frac{1}{2}$	5	7
R.G.	27 0	38 0	38 0	6 0	6 0	228	228	456	$3\frac{1}{2}$	$3\frac{1}{2}$	5 6	1 6	—	$2\frac{1}{2}$	$2\frac{1}{2}$	42	26	21	47	$4\frac{1}{2}$	10	14
F.1	25 8	32 0	30 0	5 0	5 0	160	150	310	$3\frac{1}{2}$	$3\frac{1}{2}$	5 6	1 10	—	$2\frac{1}{2}$	$2\frac{1}{2}$	32	23	18	41	4	11	15
F.2	—	46 0	46 0	7 0	6 0	322	276	598	$3\frac{1}{2}$	$3\frac{1}{2}$	6 0	1 7	—	$3\frac{1}{2}$	$3\frac{1}{2}$	42	26	21	47	5	11	16
F.3	25 0	32 0	30 0	6 0	6 0	192	180	372	$2\frac{1}{2}$	$2\frac{1}{2}$	5 3	2 0	—	$2\frac{1}{2}$	$2\frac{1}{2}$	48	24	19	43	$4\frac{1}{2}$	9	14
F.4	25 6	32 10	31 6	6 0	6 0	197	189	386	$2\frac{1}{2}$	$2\frac{1}{2}$	5 3	2 0	—	$2\frac{1}{2}$	$2\frac{1}{2}$	48	19	16	36	$6\frac{1}{2}$	9	16
F.4	25 6	33 0	31 6	6 0	6 0	198	189	387	$2\frac{1}{2}$	$2\frac{1}{2}$	5 3	2 0	—	$2\frac{1}{2}$	$2\frac{1}{2}$	48	19	16	36	$6\frac{1}{2}$	9	16



"MILESTONES": Plan views of the Martinsyde machines

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

FORTHCOMING EVENTS

July 3	1920.	..	..	Air Tournament at London Aerodrome, Hendon, in aid of R.A.F. Memorial Fund.
July 9-20	..	..	..	Sixth International Aero Exhibition at Olympia.
July 17-31	..	..	..	Aeronautical Meeting, Antwerp.
July 24	..	..	..	Aerial Derby, at London Aerodrome, Hendon.
Aug. 28-29	..	..	..	Jacques Schneider Cup, Venice.
Sept. 8, 9 and 10	..	..	..	Fédération Aéronautique Internationale Conference, Geneva.
Sept. 27-Oct. 2	..	..	..	Gordon-Bennett Aviation Cup, Paris.
Oct. 23	..	..	..	Gordon-Bennett Aeronautic Cup, Indianapolis.

COMMITTEE MEETING

A Meeting of The Committee was held on Wednesday, June 9, 1920, when there were present:—Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S., in the Chair, Mr. Ernest C. Bucknall, Mr. G. B. Cockburn, Wing-Com. John D. Dunville, R.A.F., Lieut.-Col. Spenser D. A. Grey, D.S.O., Squad.-Leader T. O'B. Hubbard, M.C., R.A.F., Col. F. Lindsay Lloyd, C.M.G., C.B.E., Lieut.-Col. F. K. McClean, Lieut.-Col. Mervyn O'Gorman, C.B., Group-Capt. C. R. Samson, C.M.G., D.S.O., R.A.F., and the Secretary.

Racing Committee.—The report of the Meeting of the Racing Committee held on May 31, 1920, was received and adopted.

Joint Standing Committee of the Royal Aero Club and the Society of British Aircraft Constructors.—The report of the Meeting of the Joint Standing Committee of the Royal Aero Club and the Society of British Aircraft Constructors held on June 3, 1920, was received and adopted.

The Secretary reported that the Society of British Aircraft Constructors had approved the Club's suggestion of offering prizes of £250, £150, and £100 to the British competitors in the Race for the Jacques Schneider Cup at Venice, in the order of their official placings.

Flying Services Fund.—The report of the Meeting of the Flying Services Fund Committee held on June 4, 1920, was received and adopted.

Aero Exhibition, 1920.—The Secretary reported that the arrangements were in hand for the organisation by the Club for an Inventions and Model Section at the Aero Exhibition, July 9-20, 1920.

Lieut.-Col. F. K. McClean and the Secretary were appointed to take in hand all the arrangements.

JACQUES SCHNEIDER CUP

The Race for the Jacques Schneider Cup and Prize of 25,000 francs, presented by M. Jacques Schneider, will take place at Venice on August 28 and 29, 1920.

In addition to the prize of 25,000 francs, the Royal Aero Club will present the following prizes to the British competitors who complete the course, the prizes being awarded in the order of the official placings, whatever they may be:—

1st British competitor	..	..	£250
2nd British competitor	..	..	£150
3rd British competitor	..	..	£100

British entries must be received by the Royal Aero Club on or before July 15, 1920.

The previous winners of the Cup were:—

1913—France: (Representative, M. Prevost on a Deperdussin Hydroaeroplane). Place, Monaco. Distance, 150 nautical miles. Time, 3 hrs. 48 mins. 22 secs.

1914—Great Britain: (Representative, C. Howard Pixton on a Sopwith Hydroaeroplane). Place, Monaco. Distance, 150 nautical miles. Time, 2 hrs. 0 mins. 16 secs.

SIXTH INTERNATIONAL AERO EXHIBITION, OLYMPIA, JULY 9-20, 1920.

Inventions and Model Section

The Royal Aero Club has undertaken the organisation of the Inventions and Model Section of the Sixth International Aero Exhibition which will be held at Olympia, July 9-20,

1920, and the Club will be glad to receive entries for this Section.

Anyone with inventions or models appertaining to aircraft is requested to communicate with the Secretary, Royal Aero Club, 3, Clifford Street, London, W.1.

ROYAL AERO CLUB

FIRST RACE MEETING, 1920 THE AERIAL DERBY

(Under the Competition Rules of the Royal Aero Club and the Regulations of the Fédération Aéronautique Internationale.)

AT THE

LONDON AERODROME, HENDON, N.W.
(By arrangement with the Grahame-White Co., Ltd.),

ON

SATURDAY, JULY 24, 1920, at 3.30 p.m.

PRIZES

The following Cash Prizes will be presented by the Royal Aero Club:—

Fastest Time (Winner of the Aerial Derby)	£500
Handicap:—1st Prize	£250
2nd Prize	£100
3rd Prize	£50

REGULATIONS

QUALIFICATIONS OF COMPETITORS.—The Competition is open to persons of any nationality holding a licence issued by any Aero Club affiliated with the Fédération Aéronautique Internationale.

ORGANISATION.—The Competition shall be conducted by the Royal Aero Club under the Competition Rules of the Royal Aero Club and the Regulations of the Fédération Aéronautique Internationale.

ENTRIES.—The entry fee is £10. This fee together with the entry form must be received by the Royal Aero Club, 3, Clifford Street, London, W.1, not later than 12 noon on Wednesday, July 14, 1920.

COURSE.—The Course is approximately 200 miles, and will consist of a double circuit of London, starting from the London Aerodrome, Hendon, with the following turning points:—

Brooklands Aerodrome, Weybridge.
Epsom.
West Thurrock.
Epping.
Hertford.

GENERAL

1. A competitor, by entering, thereby agrees that he is bound by the Regulations herein contained or to be hereafter issued in connection with this competition.

2. The interpretation of these regulations or of any to be hereafter issued shall rest entirely with the Royal Aero Club.

3. The competitor shall be solely responsible to the officials for the due observance of these Regulations, and shall be the person with whom the officials will deal in respect thereof, or of any other question arising out of this competition.

4. A competitor, by entering, waives any right of action against the Royal Aero Club for any damages sustained by him in consequence of any act or omission on the part of the officials of the Royal Aero Club or their representatives or servants or any fellow competitor.

5. The aircraft shall at all times be at the risk in all respects of the competitor, who shall be deemed by entry to agree to waive all claim for injury either to himself, or his passenger, or his aircraft, or his employees or workmen, and to assume all liability for damage to third parties or their property, and to indemnify the Royal Aero Club in respect thereof.

6. The Committee of the Royal Aero Club reserves to itself the right to add to, amend, or omit any of these rules should it think fit.

Entry forms can be obtained from the Secretary, Royal Aero Club.

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.
H. E. PERRIN, Secretary.

AIRCRAFT AND INSECTS.

QUITE a lively interest has been revived, following the Cairo-Cape flights, upon the question of noxious insects being conveyed into other climes than those to which they by nature belong. Although there are possibilities that aircraft might be a medium of such dissemination, it is hardly to be conceived that such possibility should affect the progress of the art. It is more a case of instituting reasonable precautions. Some very interesting data upon this matter were forthcoming last week from Dr. Chalmers Mitchell at the fortnightly Scientific Meeting of the Zoological Society, when delegates of the Imperial Entomological Congress attended. Dr. Mitchell's subject was in connection with his experiences, and the effect the aeroplane had upon various animals, on the recent *Times* aeroplane trip in Africa. He described the main geological and geographical features of the route traversed, as seen from the air, and explained his discovery of a hitherto unknown volcanic area north of Khartum, between Meroë and Berber. He was able to exhibit a piece of volcanic tufa, which had been picked up in the valley below Meroë by Sir Herbert Jackson, and which had led the Government geologist at Khartum to suspect that somewhere in the unexplored tract of country north of Khartum volcanoes must exist.

"Before starting," said Dr. Chalmers Mitchell, "his friend, Professor Maxwell Lefroy, Professor of Entomology at the Imperial Institute, had reminded him of the fashion in which human transport had aided the spreading of noxious insects. Cockroaches had come to England in ships, tsetse and sleeping sickness had followed the caravan routes across Central Africa, and the Colorado beetle had traversed the Continent of North America by road and rail. It was at least possible that aeroplanes, travelling hundreds of miles in a few hours, might become a serious factor in the spreading of insect pests. Professor Lefroy had inspected the Vickers-Vimy aeroplane before it left London, and had marked on a large photograph every part where insects might settle. Dr. Mitchell had taken with him a set of collecting tubes with the object of carrying out Professor Lefroy's suggestion. Every morning before the start he had carefully surveyed the machine in order to capture examples of any insects that had settled on it in the night. He had intended to follow this by a second examination immediately on descending from the air, so as to ascertain which of the insects that had settled over night had survived the journey through the air. In actual fact, no positive results were obtained. The most careful search before every start failed to reveal the presence of living insects, except that once, at Jebel elin, where the aeroplane had come down on the edge of a native village, a few house-flies had come into the cabin, and were still present at the next stopping place. He did not think, however, that the possibility of insects being carried by aeroplane had been disproved. There were very few insects, except white ants, on the dry desert areas on which they had for the most part descended, and the trip had been made during the driest season of the year. On many of the aerodromes, white ants or termites were present in huge colonies, and the wheels and tail-skid of the aeroplane were kept protected by bands of thick grease. He and his companions were provided with mosquito nets within which they had slept when they camped out. But mosquitoes had caused them very little trouble in the open, although they suffered severely from them in many of the 'civilized' settlements. He had been bitten by tsetse fly on two occasions, and was greatly surprised by the painfulness of the bite. A still more annoying insect was a large tabanid, known as the hippopotamus fly. Another annoying fly was the umbwa of the shores of Lake Victoria Nyanza.

"With regard to larger animals, more had been seen from the aeroplane than he had anticipated, partly because he had asked the pilots to fly as near the ground as was safe. Their actual height above ground level varied from a few hundred feet to two or three thousand feet. On account of the rapid pace of the aeroplane, he had found it impossible to focus with field-glasses on any objects close under the aeroplane. From Heliopolis to Khartum no mammals except camels and other domesticated creatures were visible. From Khartum southwards the wild fauna was much more abundant. At Renk, south of Jebel elin, they had made a forced landing, and had to pass the night. Some elephants came very near, trumpeting loudly, but apparently were scared away by the fire. The first elephants actually seen were in the Sudd, a female and young on a small green island. They seemed frightened by the noise of the 'plane, and plunged or fell into the water. Soon after leaving Mongalla, near Mount Lado, a large herd, known as the Gondokoro herd, was passed. It consisted of nearly 20 animals, some of the elephants being quite young. Between the Victoria Nile and Lake Victoria Nyanza many elephants were seen, including one enormous bull with very large tusks. Rhinoceros were seen frequently, generally two or three together. They were always more scared of the aeroplane than were elephants. Hippopotamus were seen in large numbers, both in the Nile and the lakes. On several occasions the aeroplane had come down so close to the water that he had seen them opening and shutting their nostrils. The hippos took no notice of the aeroplane. Buffalo and immense herds of buck were passed repeatedly from Khartum right through to German East Africa. All these animals scattered as soon as the aeroplane came near, apparently being panic-stricken. It was very difficult to identify species or even genera from above, and the varying height of the aeroplane made it impossible to estimate the size of individuals with any accuracy. It was remarkable that neither he nor the pilots had ever been able to identify zebras, although it was to be presumed that many had been passed, especially south of the Equator. Possibly the striped pattern, seen from above, blended into a pale grey, so camouflaging these animals. At no time were lions or leopards visible, although they were repeatedly heard close to the camps at night, especially at Nimule.

"Birds were never seen at any height in the air. Vultures, eagles, and great white herons, the small white egret, jabiru stork, wood ibis, and many other large birds were seen in almost incredible quantities along the river and lakes, and in the Sudd. His friend Colonel Van Ryneveld, the South African pilot, who successfully reached Cape Town, had told him that the 'Silver Queen' aeroplane passed over the Sudd at a very great height, probably at least 10,000 ft. above sea level. He had met large numbers of duck flying northwards. Possibly this was part of the northward breeding migration. But the South African pilot had also overtaken large flocks of jabiru, which were flying south, and so obviously not migrating. These storks were flying at a greater height than the aeroplane, a very remarkable observation."

Dr. Chalmers Mitchell, in conclusion, said "that aeroplanes might be of great service to game wardens and those to whom it was necessary to locate game for various purposes. So far as the naturalist or sportsman was concerned, one or two aeroplanes could take them and their equipment to suitable camps from which game might be tracked or observed on foot. In the various forced landings that *The Times* machine had made, sometimes in places where probably no white man had ever been before, the wild animals were often quite easy to approach, not yet having learned to be shy of man."

Mentioned in Despatches

In a supplement to the *London Gazette* dated June 11, it was stated that the following additional names have been brought to the notice of the Secretary of State for War for distinguished, gallant and valuable services and devotion to duty:—

France

By Field-Marshal Sir Douglas Haig, Commander-in-Chief of the British Armies in France, in his despatch of March 16, 1919: Lieut. H. O. Long, D.S.O., 3rd Squad., R.A.F.

Egypt

By Gen. Sir E. H. H. Allenby, G.C.M.G., K.C.B., Gen. Officer Commanding-in-Chief, Egyptian Expeditionary Force, in his despatch of April 3, 1918: Capt. R. M. Drummond, D.S.O., M.C., R.A.F.; T. Capt. A. H. Peck, D.S.O., M.C., Gen. List and R.A.F.

Our Bombs!

It is officially announced by the Dutch Foreign Ministry that the British Government has accepted responsibility for the dropping of bombs on Goes, in Zeeland, on December 12, 1917, and has declared itself ready to pay compensation.

Commissions of R.A.F. Officers

THE Air Ministry announces that, although every effort is being made to expedite despatch, a large number of officers who were granted temporary R.A.F. commissions have not yet received their formal commissions. Many of these forms are returned undelivered owing to unnotified changes of address, and it would greatly facilitate the work of despatch if demobilised officers and the next of kin of deceased officers—particularly those resident in the Dominions—who are desirous of receiving forms of commission would apply to the Secretary, Air Ministry (S. 7), Kingsway, W.C. 2, stating their full names and present address.

THE ORENCO TYPE "F" TOURISTER AEROPLANE

THE Type "F" is the first commercial design of the Ordnance Engineering Corporation, and when it was exhibited at the New York Aero Show in March, some doubt was expressed as to whether the 150 h.p. engine would be sufficient for a 4-passenger plane with side-by-side seating. It is stated that when the plane was first tested with pilot alone it was found to possess marked stability, quick climb and plenty of reserve power. Further tests were then made with one, two and three passengers, and in each case the same even stability and sensitive response to controls was observable. In one test with four aboard, and full fuel load, the plane rose from the ground after a run of about 200 ft. On another test with three aboard, the plane was flown at full speed parallel to the ground at a height of only a few feet, and although a gusty wind was blowing at about 25 miles an hour, the plane kept an even, straight course, necessitating practically no movement of controls.

There are no controls in the forward seat, and the two front passengers have ample room. In the rear cockpit the dual side-by-side controls allow either of the two occupants to handle the plane. Incidentally, this control arrangement is well suited for instruction, for the pilot is close to his pupil, who can see and hear just what the pilot does and says throughout the flight.

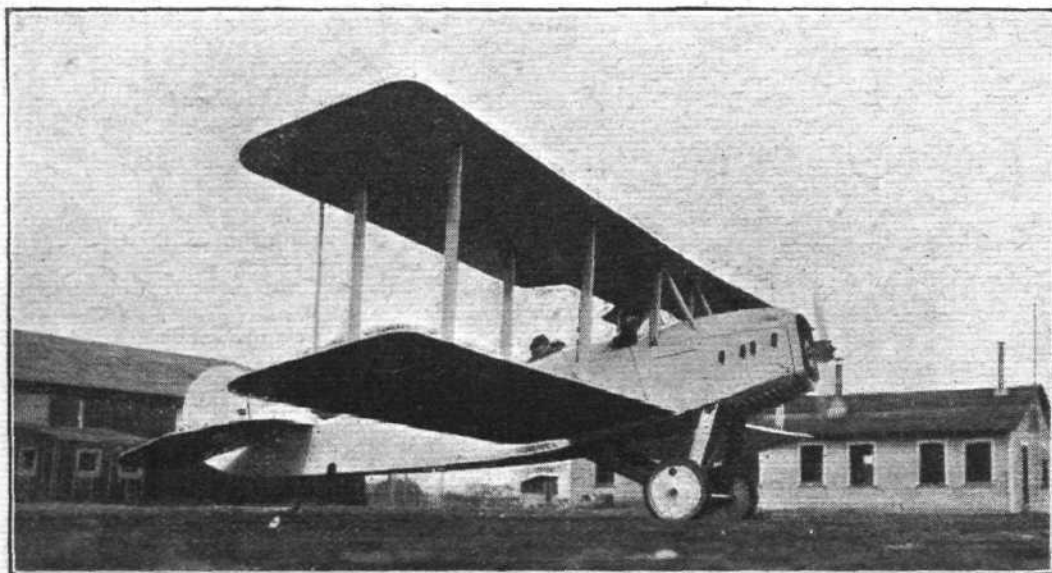
The R.A.F. No. 15 wing curve is used. Wing chord, 5 ft. Gap between wings, 5 ft. Dihedral, upper and lower,

Interplane struts are all similar in shape, with the exception of a variation in length to provide for the difference in gap between front and rear spars. Maximum strut section, $1\frac{1}{2}$ in. by $4\frac{1}{2}$ ins. Upper ends of centre section struts are 3 ft. 4 ins. apart. Intermediate struts are located 7 ft. 5 ins. from centre line of plane; from these the outer struts are spaced 8 ft., leaving an overhang of 3 ft. 6 ins.

Strut fittings consist of an eye-bolt running through the cable plate and wing beam; another bolt running through the plate-fitting close to the incidence cable does not pierce the beam. Struts have a sheet-steel plate fitting with a slot to receive the eye-bolt. This fitting allows an adjustment of the stagger. All cables $\frac{1}{8}$ -in. diameter; flying cables doubled.

Incidence cables are eliminated in the centre section trussing, so that easy access to the front cockpit is facilitated. Drift and anti-drift stresses are taken care of by a pair of inclined steel tube struts running from the centre section to the fuselage. These tubes have solid steel adjustable forked ends, Balsa wood streamline, wrapped with linen. Four drift cables run from the lower longerons, aft of radiator, to the ends of the rear intermediate wing struts.

The length of the fuselage from radiator face to stern-post is 21 ft. 6 ins.; maximum depth, 3 ft. 8 ins.; width at cockpits, 3 ft. 8 ins. The centre line of the propeller shaft is 12.8 ins. below top of upper longerons, to which it is parallel. At



Three-quarter
front view of the
Orenco type "F"
Tourister

1.5°. Incidence, 2°. Span of both upper and lower wings, 38 ft. Wings are in four main panels in addition to the centre panel, which is 44 ins. wide. Upper and lower panels are similar in all respects.

Ribs are built up with grooved spruce battens and basswood webs lightened between spars. All ribs are identical throughout, and are equally spaced 12 ins. apart. Internal compression members between spars are square section spruce, tapered. Internal wiring with solid No. 10 wires and turnbuckles. Drift wires doubled in two inner bays and anti-drift wires single.

The leading edge is of semi-oval section spruce, and the main spars of spruce channelled to I-section between compression and wing struts. The trailing edge is of light Shelby steel tube, attached to ribs with sheet copper strips. Wing ends are of laminated spruce, and Balsa wood is used to round-out curves where strength is not required. Mahogany veneer $\frac{1}{8}$ -in. thick is used on top of wings from leading edge to front spar. Flat head brass nails used throughout. All wood parts are coated with Valspar varnish to protect them from moisture, and metal fittings and wires are enamelled to prevent corrosion.

Best grade A Irish linen is used for wing covering. The fabric is sewed on and bound with protective tape in the most approved manner. After three coats of dope, the wings are varnished and enamel applied in any desired colour. Valentine's special grey is used unless otherwise specified.

the stern the fuselage terminates in a 14-in. steel tube. When in normal flight position the top longerons are 6 ft. 8 ins. from the ground; in this position a line from wheels to skid makes an angle of 12° with the ground line.

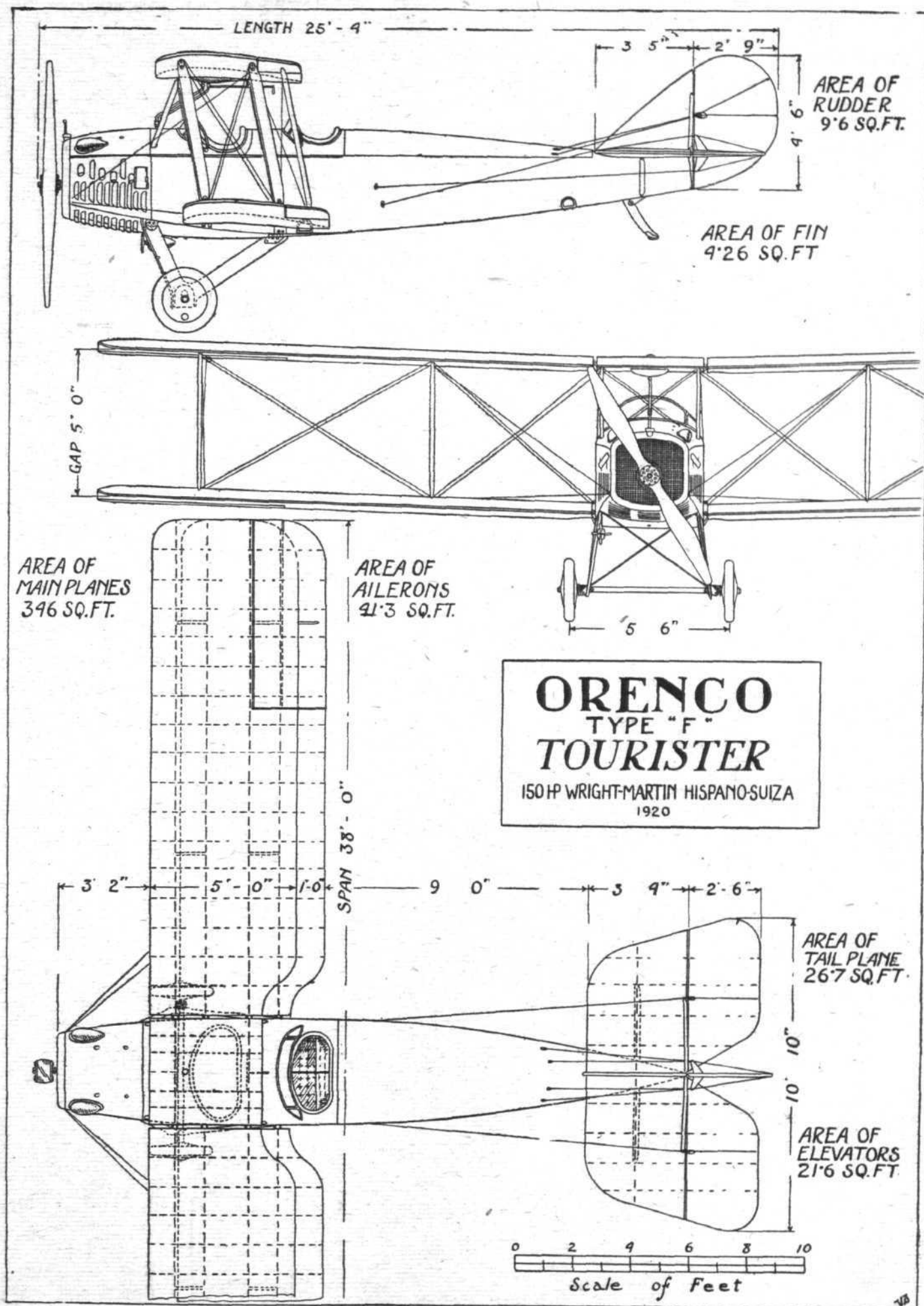
The longerons are of $1\frac{1}{2}$ -in. square ash from radiator to rear of cockpit, and $1\frac{1}{2}$ -in. spruce aft of the rear seat. Spruce cross and vertical members cross-tied with solid piano wire, No. 8 forward of pilot's seat, No. 10 aft. At the rear they are all tapered from $1\frac{1}{2}$ in. square at centre to $\frac{1}{2}$ in. at ends.

Aluminium covering No. 20 gauge is employed at cockpits and on all sides from radiator to front centre panel struts. Ventilating louvres about 3 ins. apart. Aluminium on under side from front to rear chassis members. Elsewhere, grade A linen covering used. All aluminium coverings in region of the engine are provided with inspection doors, and are attached with easily removable thumb-screws drilled and locked with copper "safety" wire.

The turtle deck is built up of light spruce T-section longitudinal members supported on lightened veneer diaphragms. The deck is easily detached for adjustment or inspection of the internal fuselage wiring.

Control cable openings in body are protected by heavy pig-skin slots stitched to the linen fabric. To facilitate handling, hand holes are provided on lower longerons forward of the stabiliser.

The radiator is supported on the sheet-steel engine plate. Engine bearers of laminated ash are supported on the engine



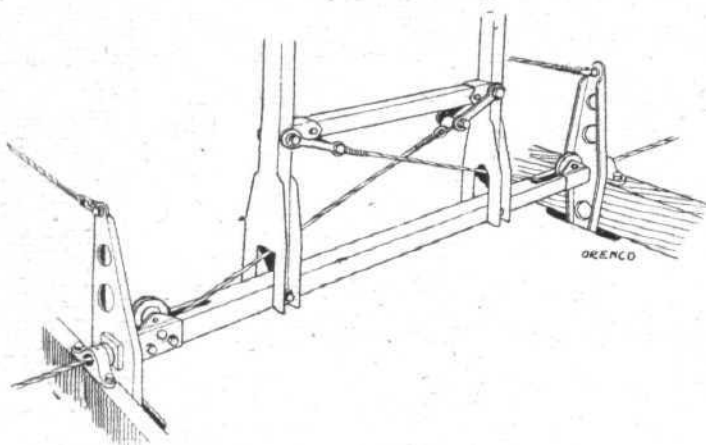
THE ORENCO TYPE "F" TOURISTER BIPLANE : Plan, side and front elevations to scale

plate and two veneer bulkheads. Steel tube braces are run from points near lower *longerons* at station 3 to front end of engine bed, and also from station 2 to lower edge of engine plate.

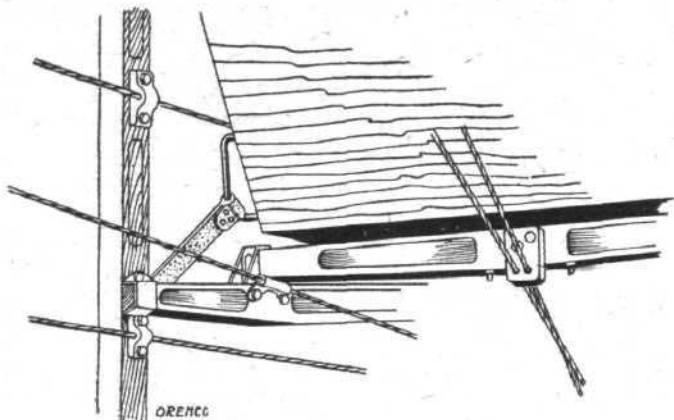
Two passengers are accommodated in the front seats, which are of mahogany-birch-mahogany veneer. Separate cushions are provided for the seats and backs. Safety belt straps are carried down by means of a steel ribbon to one of the heavy longitudinal members near the lower *longerons*. The seats are of veneer. A continuous aluminium fire-proof wall separates the engine section from the front

the same construction as the larger magnetos, and is mounted in front of the pilot's instrument board. The engine is primed through the pet cocks on the intake manifolds and turned over compression on about three cylinders, by the airscrew. The mechanic stands aside and the pilot puts the ignition switch on and turns the starting magneto by hand.

A V-type landing chassis is fitted, the wheel tread being 5 ft. 6 ins. Wheels, 26 ins. by 4 ins. Axle $1\frac{1}{2}$ in. diameter; $\frac{1}{8}$ -in. wall. The axle is located 1 in. aft of the lower wing leading edge. Chassis members are of spruce 5.5 ins. by 1.5 in. streamline section. Upper ends are secured to body by means



THE ORENCO TOURISTER: The dual side-by-side aileron and elevator controls



THE ORENCO TOURISTER: The control leads from rear cockpit. Elevator cables at side; rudder cables, under seat

cockpit. A locker located between top *longerons* and the curved cowling will hold about 2.5 cubic feet of contents.

The passengers' floor is of three-ply veneer resting directly on the lower *longerons*. The veneer flooring is carried above the lower *longerons* by lightened transverse stringers strengthened on the underside by longitudinal members, to which the rudder foot-bar pyramids are bolted.

Windshields of transparent celluloid are built up with aluminium frames, the rear shield being designed so as to permit unrestricted vision over the sides in making landings.

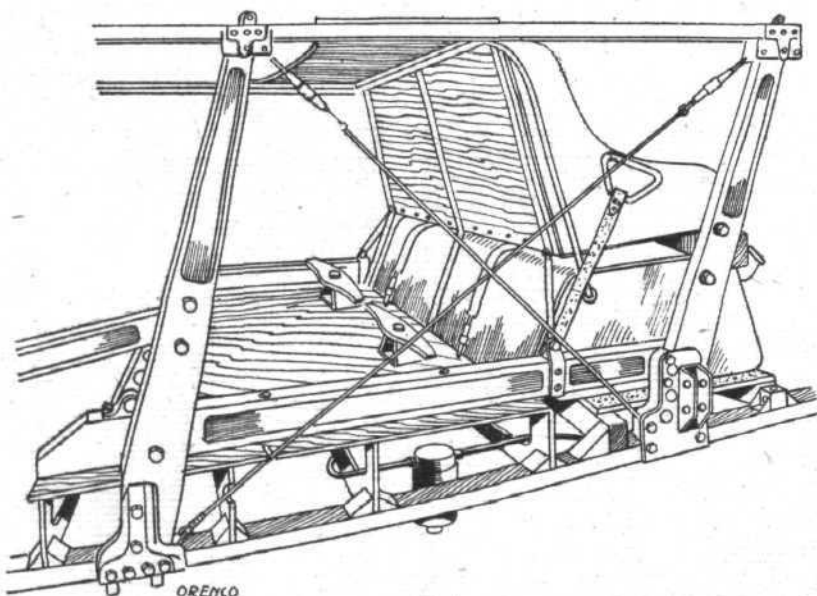
The mahogany instrument board is fitted with a tachometer indicating up to 2,000 r.p.m., a Taylor Instrument Company's

of double forked plate fittings with longitudinal pins. Shock absorber cord is attached to saddle fittings outside the chassis members, giving a maximum of impact absorption close to the wheels.

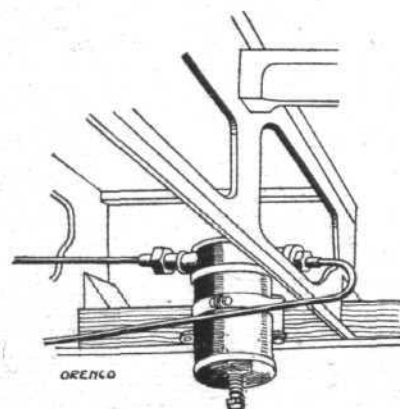
Double cables, with spruce fillers between, brace the forward chassis struts; no cables aft.

Two steel tubes space lower ends of chassis and a Balsa wood streamline fair in the spacing tubes. This streamline unit is 9 ins. by 4 ft.; it has some of the properties of a wing, and does not add to the head resistance.

Two control sticks and foot bars are provided in the rear cockpit. Control column and members are of square steel tube. The transverse shaft with sheet-steel levers for elevators is carried on bronze bearings at either side of the cockpit. The vertical columns have forked lower ends. A spacer bar is run between the columns about 8 ins. above the transverse shaft. Aileron cables terminate at spacer bar ends. Cables run direct to guide pulleys which lead the cables



THE ORENCO TOURISTER: The front seat arrangement, showing 27-gal. petrol tank, and dual rudder bars



The Orenco Tourister: The petrol strainer under the floor of the rear cockpit

altimeter with zero mark adjustable with sea level, and indicating up to 25,000 ft.; 8-day Waltham watch; oil gauge; Boyce distance-type thermometer for engine water temperature. All instruments have "radium" dials. A throttle control lever is provided at the centre of the instrument board so that it may be operated from either the right or left seat. The carburettor altitude adjustment lever is at the right *longeron*.

For starting, a Dixie type 800 magneto is used. It is of

through the transverse shaft bearings, from which point the cables emerge from the body. Cables run around pulleys at outer wing struts and then up to upper ailerons.

A steel tube bar, streamlined with Balsa wood, connects upper and lower ailerons. The compensating aileron cable runs from lower ailerons to a pulley at upper wing and then across the underside of upper wing. Turnbuckles for adjustment are provided at centre section. Fibre guides on wing struts prevent wear and whipping of cables.

Elevator cables run direct from control stick levers to the steel control arms on the elevators. A pair of rudder cables are run independently from each foot bar, using four cables in all. Fibre cable guides are bolted on the under side of pilot's seat.

Fin and rudder are built up with steel tube frames. The rudder ribs are of light-gauge channelled sheet steel drilled for lightness, all wrapped and welded to the frame. The fin base measures 3 ft. 5 ins.; height, 2 ft. 9 ins. Thin stern-post of steel tube which continues down and fits into the steel tube fuselage termination. Tube braces are fitted from the stabiliser to points 9 ins. from top of fin. Maximum dimensions of rudder are: Height, 4 ft. 6 ins.; width, 2 ft. 9 ins.

The stabiliser is bolted to the upper longerons with $\frac{1}{2}^\circ$ angle of incidence, and is built up like the wings, with spruce ribs. Overall span at rear edge, 10 ft.; chord, 3 ft. 4 ins. It is supported from below by means of steel braces at its forward main beam and solid wires at the rear. Elevators are 2 ft. 6 ins. wide, and measure 10 ft. 10 ins. from tip to tip.

The ash tailskid is mounted on a universal fork bearing. Upper ends tied with $\frac{1}{4}$ -in. rudder cord anchored to steel rings running through upper portion of the solid veneer bulkhead at the station nearest the stern-post. A steel cable limits the stretching of the rubber, and a single length of rubber cord to lower longerons absorbs the rebound motion. Rawhide lacing used to tie rubber cords together, and the lower end of the skid is shod with a substantial metal shoe.

Because of the difficulties encountered by tail skids, special research was made to obtain a really efficacious skid, and this design has proved exceptionally satisfactory in all its details.

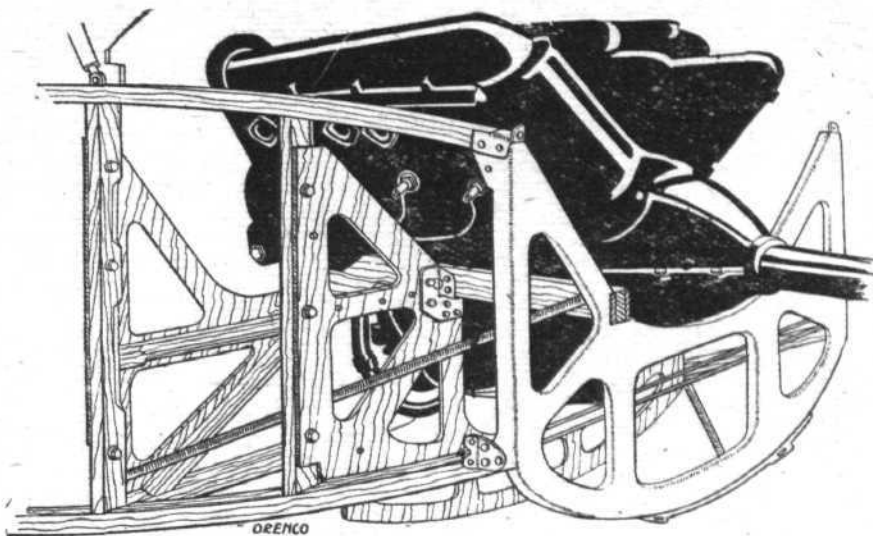
The engine is an 8-cylindrical Model A Wright-Martin Hispano-Suiza developing 150 h.p. at 1,450 r.p.m. at sea level.

The bore and stroke are 120 mm. by 130 mm. respectively. Displacement, 11,762.15 cub. ins. Weight of engine complete with hub-flange and bolts, carburettor and two magnetos, but without radiator, oil, starting magneto, propeller or fuel system, is 445 lbs.

A Zenith Type 48 D.C. carburettor is fitted. Air is led to the carburettor by means of a megaphone duct behind the

at 1,450 r.p.m., and the oil consumption, $\frac{1}{4}$ gal. per hour. The main fuel tank is under the front seat, and has a capacity of 27 gals.; gravity tank in centre section, 8 gals. The oil tank is below flooring of forward passengers' compartment, and has a capacity of about 4 gals.

A propeller-driven gear pump on right-hand chassis member pumps fuel from main tank to gravity tank. A

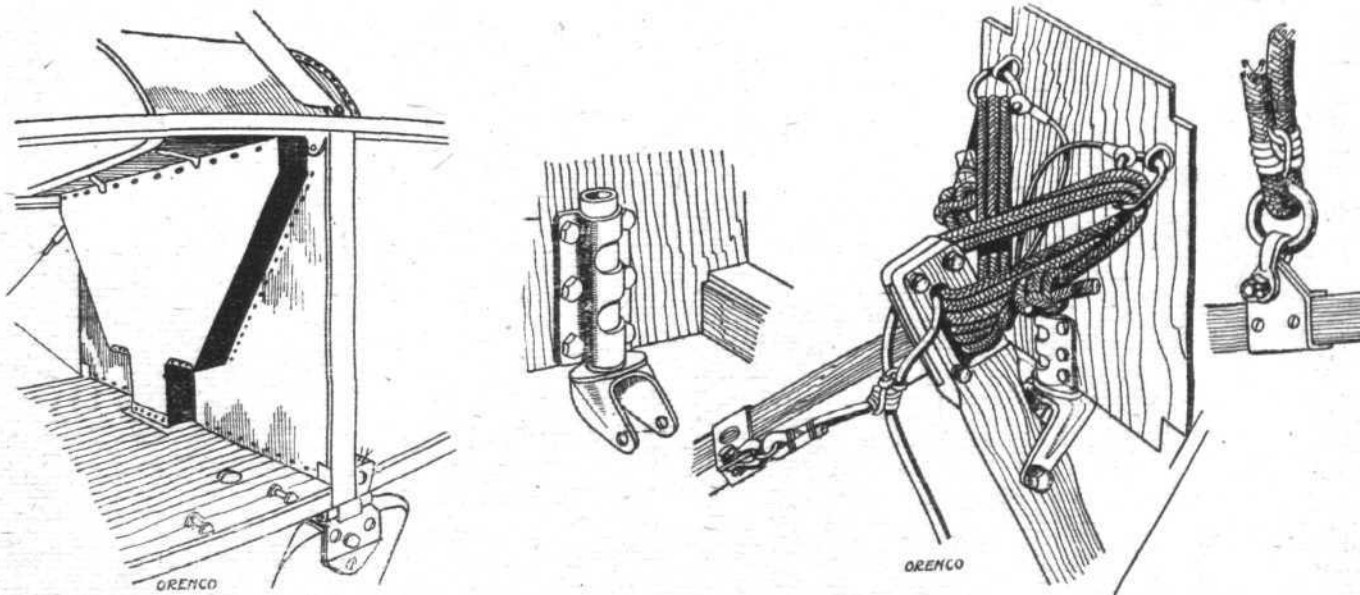


THE ORENCO TOURISTER: The engine mounting, showing the front steel engine plate, and the veneer bulkheads

copper feed pipe with shut-off valve leads fuel to the carburettor jet. Overflow lines run down the two rear centre-section struts; glass sight gauges indicate whether the system is functioning properly. A "Sasco" strainer located on lower right longeron under pilot's floor is interposed in the petrol system between main tank and gear pump, to keep the fuel free from foreign matter.

Hartzell walnut propellers, 8 ft. 6 ins. in diameter, are fitted, and the blades are wrapped with linen from tips to within 18 ins. of the centre.

Since the foregoing was written some particulars have come to hand of a test made recently at Mitchel Field, Mineola, N.Y., recently. Piloted by Mr. Clarence Coombs, formerly chief test pilot at the U.S. Testing Aerodrome, it carried three other passengers to a height of 16,200 ft., which is claimed as a new world's record, although the



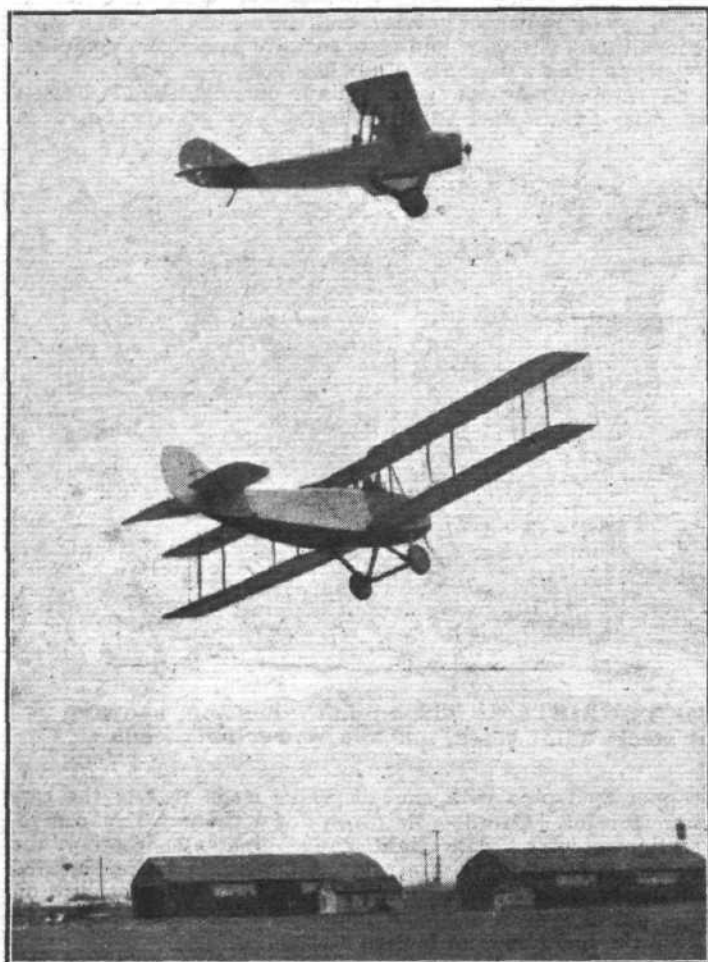
THE ORENCO TOURISTER: On the left the aluminium fire-proof bulkhead separating the front cockpit from the engine. On the right the general arrangement of the tail skid shock-absorber system is seen, together with some details of the swivel mounting, etc.

water radiator. The mixture proportion delivered by the Zenith is subject to a slight variation in passing from sea-level to about 3,000 ft. altitude. By moving the altitude adjustment lever at the side of cockpit, the mixture can be corrected for about 10,000 ft. altitude.

The petrol consumption figures out at 13-15 gals. per hour

performance does not appear to have been officially observed. It is stated that the climb occupied 1 hr. 10 mins.

As a result of this test, the makers decided to put in hand a batch of twenty-five "Touristers," embodying one or two improvements on the first model. The chief difference will be the use of a 200 h.p. Hall-Scott "Liberty Six" motor,



Two views of the Orenco Tourister in flight

a type which has given very good results in the U.S. mail and army aeroplanes. It is felt that while the 150 h.p. engine has been found to give ample power for ordinary purposes, it will be an advantage to have the additional power available for flying in mountainous country, and also for improving the "take off," although it is claimed that the machine is already very good in this respect.

It has also been found possible to improve the accommodation of the machine which should add considerably to its prospects from a commercial point of view. The front and rear cockpits have been enlarged to permit more freedom to the passengers, while a door fitted to the front cockpit allows of easier access to the interior for the passengers. Another alteration, which, if it is not altogether an improvement certainly, adds to the attractiveness of the machine, is the employment of a mahogany veneer fuselage.

The main specifications of the "Orenco" Type F are:—

Span (both planes)	.. .. .	38 ft.
Chord	.... ..	5 ft.
Gap	.. .. .	5 ft.
Stagger	.. .. .	1 ft.
Overall length	.. .. .	25 ft. 4 ins.
Overall height	.. .. .	9 ft.
Area of top plane	.. .. .	182 sq. ft.
Area of bottom plane	.. .. .	164 sq. ft.
Total area (including ailerons)	.. .. .	346 sq. ft.
Area of ailerons (4)	.. .. .	41.3 sq. ft.
Area of tail plane	.. .. .	26.7 sq. ft.
Area of elevators	.. .. .	21.6 sq. ft.
Area of fin	.. .. .	4.26 sq. ft.
Area of rudder	.. .. .	9.6 sq. ft.
Weight empty	.. .. .	1,477 lbs.
Weight fully loaded	.. .. .	2,432 lbs.
Useful load	.. .. .	955 lbs.
Fuel weight	.. .. .	200 lbs.
Loading per sq. ft.	.. .. .	7.15 lbs.
Loading per h.p.	.. .. .	16.2 lbs.
Speed, ground level	.. .. .	90 m.p.h.
Speed at 5,000 ft.	.. .. .	84 m.p.h.
Speed at 10,000 ft.	.. .. .	78 m.p.h.
Climb to 5,000 ft.	.. .. .	9 mins.
Climb to 10,000 ft.	.. .. .	24 mins.
Climb to 15,000 ft.	.. .. .	62 mins.
Endurance	.. .. .	(250 miles) 2½ hrs.

ROYAL AERONAUTICAL SOCIETY NOTICES



Wilbur Wright Lecture.—Members of the Royal Aeronautical Society and others desiring to attend the Wilbur Wright Lecture, which is to take place at the Central Hall, Westminster, at 8.30 p.m., on Tuesday, the 22nd inst., should now make early application for tickets, as the reserved seats are being applied for in increasing numbers, and shortly only seats at the back of the hall and gallery will be available. H.R.H. the Duke of

York will preside, and has signified his intention of being present at the Council Dinner beforehand, to which Sir E. H. Tennyson d'Eyncourt, K.C.B., Air Vice-Marshal Sir E. L. Ellington, Wing-Commander Louis Greig, Major Melvin Hall, U.S.N., Commander J. C. Hunsaker, U.S.N., Commander E. S. Land, U.S.N., The Most Hon. The Marquess of Londonderry, Maj.-Genl. J. E. B. Seely, Maj.-Genl. E. D. Swinton, and Maj.-Genl. Sir F. H. Sykes, have also accepted invitations. This is to be held at the Carlton Restaurant at 6.45 p.m., for

7.0 o'clock. The subject of the lecture is "Naval Architecture in Aeronautics," by Commander J. C. Hunsaker, U.S.N., Corps of Constructors, Assistant for Aeronautics in the Bureau of Construction, U.S. Navy Department.

Olympia Aero Show.—Arrangements have been made for a reception room for the use of members to be available during the Aero Show, which is to be held at Olympia from July 9 to 20. Stand numbers 94 and 95 have been allotted for this purpose by the Exhibition Committee, and will be found immediately on the left of the Hammersmith Road entrance. A telephone, which may be used free by members, will be installed, and the number will be announced as soon as this is known. The room will be fitted up as a sitting room, and current numbers of the aeronautical papers will be transferred for this period from the Library at 7, Albemarle Street.

W. LOCKWOOD MARSH,

7, Albemarle Street, W.1,
June 11, 1920.

Secretary.

Australia's Gifts Replaced

By way of reciprocating the gift of 41 aeroplanes from citizens and organisations in Australia to the Royal Air Force during the War, the Air Ministry has now handed over to the Australian Air officers in London, 28 machines of the De H 9 type, fitted with Siddeley-Puma engines. This gift, which is in addition to the 100 machines given as a nucleus of a Commonwealth Air Force, will be shipped towards the end of this month.

Aviation Helmets

THE Royal Commission on Awards to Inventors on Monday heard a claim by Mr. Charles Henry Curtis, a tailor, trading as Messrs. George Curtis and Co., of Grafton Street, in respect of an aviation helmet, which he said was his invention.

Mr. T. Carthew, counsel for the claimant, explained that his client first took up the question of head protection for aviators in 1913, and in 1916 one of his helmets was adopted

as a field pattern by the Royal Army Clothing Department for aviation purposes. Mr. Curtis had made a claim of 5s. royalty on each helmet, and the Ministry of Munitions had offered him £100.

Maj. Lewis Turner, formerly an instructor in the Royal Air Force, stated he considered the helmet the best in use and superior to the "Roold."

For the Ministry of Munitions, Col. W. D. Beattie, of the Civil Aviation Department, said that for all-round purposes they had found that the "Roold" helmet was superior to the helmet invented by the applicant. It was lighter, not so hot, and probably gave equal protection.

Mr. Trevor Watson, for the Crown, said the "Roold" helmet was the invention of a Frenchman, and it was because of the difficulties in supply that the Department was compelled to fall back on Mr. Curtis's pattern.

The Commission will announce their award.

Personals

Married

Maj. Sir C. J. Q. BRAND, D.S.O., the South African airman who, with Col. Sir P. Van Ryneveld, flew from England to the Cape, was married on June 9, at Goodmayes, near Ilford, to Miss MARIE VAUGHAN, daughter of Mr. and Mrs. Vaughan, of Somerset House, Goodmayes. Col. Sir P. Van Ryneveld was best man. Among the presents was a silver salver from the 6th Air Brigade.

OSWALD DAWSON, D.F.C., of Goulburn, was married on March 17, at Suva, Fiji Isles, to KATHLEEN FEDDEN, of Neutral Bay, Sydney.

Capt. PERCY DE LEUVILLE DYSON-SKINNER, R.A.F., son of the late Arthur Dyson and of Mrs. Skinner, Boscombe Bay Hotel, Bournemouth, was married on June 7, in London, to MARIE (LUCIENNE), third daughter of Monsieur and Madame LUCIEN LALOT, of Castex-Lectourois, Gers, France.

Sqdn. Leader ALEXANDER FRANCIS ANDERSON HOOPER, O.B.E., R.A.F., youngest son of the late Reginald Hooper and Mrs. Langford of Southbrook, Starcross, Devon, was married on June 1, at St. Mathias' Church, Richmond, to CONSTANCE MAUDE STEPHENS, only daughter of the late T. Arthur P. Stephens, M.A., of Torquay and Henley-on-Thames.

ALFRED HUGHES, late R.A.F., was married on June 10 at Elmstone, Canterbury, to FRANCES YORKE, eldest daughter of the late NEVILLE LUCAS-CALCRAFT, Gaultby, Lincolnshire.

Capt. FRANCIS WINDSOR PARKER MARRIOTT, M.C., late "B" Battery, Anti-Aircraft, of Norwich and Ingleden Park, Kent, was married on June 1, at St. Luke's, Chelsea, to NORAH FRANCES PHYLLIS FOSTER, of Norwich, formerly of Drayton, Norfolk.

Capt. SIMON ORDE, late R.A.F., only son of Mr. and Mrs. Edwin Orde, of 15, Basil Mansions, Knightsbridge, was married on June 10 at Brompton Oratory, to Miss GEAN MOSTYN, eldest daughter of the late Mr. and Mrs. George Mostyn, of Clifton Hill, Garstang, Lancashire.

GEORGE LESLIE PARGETER, D.F.C., late Lieut. R.A.F., eldest son of the late Mr. G. H. Pargeter and Mrs. G. H. Pargeter, of 9, Luttrell Avenue, Putney, was married on June 1, at St. Margaret's Church, Putney Park Lane, to DORA, second daughter of Mr. and Mrs. HENRY BIRTLES, of 8, Montolieu Gardens, Putney.

Maj. REY GRIFFITH PARRY, D.S.O., R.A.F., late R.N., was married on June 1, at St. George's Hanover Square, to Miss JOAN BUCKLEY, M.B.E., younger daughter of Maj. T. W. Buckley, R.A.M.C., and Mrs. Buckley, Clopton Manor, Thrapston, and The Ridge House, St. George's Hill.

Flt. Lieut. HAROLD M. PROBYN, D.S.O., R.A.F., only son of the late William Probyn, was married on June 5 at St. Mary Abbot's Church, Kensington, to MARJORY, third daughter of the late FRANCIS EVANCE SAVORY, of 16, Ladbroke Terrace, W.

Sqdrn. Leader F. ESK SANDFORD, A.F.C., R.A.F., was married on April 3, at St. Mark's Church, Darling Point, Sydney, N.S.W., to GLADYS HENNING, O.B.E.

Wing-Com. A. WELLESLEY-BIGSWORTH, C.M.G., D.S.O., D.F.C., R.A.F., son of the late Mr. and Mrs. Wellesley-Bigsworth, was married on June 9, at the Chapel Royal, Savoy, to Mrs. KATHLEEN ELEANOR GARDINER, widow of Major E. Gardiner, R.E.

To be Married

The engagement is announced between Capt. JOSEPH MILNE HEAP, R.A.F., eldest son of Mr. and Mrs. Joseph Heap, of Outwood, Birkenhead, and ALINE, eldest daughter of the late JAMES R. HALSALL and Mrs. HALSALL, 23B, Abercromby Square, Liverpool.

The engagement is announced of Capt. RICHARD THORNTON NEVILL, R.A.F., son of Mr. F. R. Nevill, J.P., and Gwladys Nevill, of Glyncoed, Llanelly, Carmarthenshire, and RUTH, second daughter of the late SIDNEY WACHER, F.R.C.S., and Mrs. WACHER, of The Hoath, Canterbury.

The marriage arranged between Lieut. A. E. P. WELMAN, D.S.O., D.S.C., R.N., eldest son of Lady (Percy) Scott, 6A, Pont Street, S.W., and EILEEN, younger daughter of Lieut.-Com. G. R. MALTBY, M.V.O., R.N. (retired), and the late HERSEY MALTBY, of 54, St. George's Square, S.W., will take place today (Thursday, June 17), at St. Michael's Church, Chester Square, at 2.15 p.m.

Item

The will of Mr. FRANK EDWARD PRIEST, M.I.C.E., Chairman of Messrs. A. V. Roe and Co., Ltd., has been proved at £8,523.

LAND, SEA AND AIR DEFENCE

ON Monday a deputation, including Sir Samuel Scott, Maj.-Gen. Sir John Davidson, Maj.-Gen. Seely, Lieut.-Gen. Sir A. Hunter-Weston, Brig.-Gen. Cockerill, Maj. Glyn and Col. Mildmay, submitted to the Prime Minister and Mr. Bonar Law the following memorandum on the subject of Imperial defence:—

1. The Army Committee of the House of Commons impresses upon the Prime Minister the necessity of an organisation to ensure the continuous study of all our means of defence in order to secure safety, efficiency, and economy.

2. In view of the vast responsibilities of this Empire in all quarters of the globe, and the great changes in the means of offence and defence on and under the sea, on land, and in the air which have developed during the late War, it is of the first importance that the problems of combined defence that have consequently arisen should be immediately and continuously studied by a competent body in close touch with the Prime Minister, so that our policy and means of defence shall go hand in hand.

3. In order to allay the anxiety felt by the country on this subject, the Army Committee of the House of Commons urges the Prime Minister to formulate a scheme whereby this object may be obtained without delay.

4. It is possible that the most practicable scheme under present conditions would be to create immediately a Standing Joint Defence Sub-Committee of the Committee of Imperial Defence, formed of the First Sea Lord, the C.I.G.S. and the

C.A.S., or officers appointed or deputed by them together with representatives of the self-governing Dominions, of India, and of other Departments concerned.

5. Whatever be the Advisory Body formed, the members of the Army Committee in the House of Commons are of opinion that it is essential:—

I. That it should meet regularly and frequently.

II. That it should have a specially selected and permanent secretariat to assist in its work, and to record its proceedings and conclusions.

III. That the chairman of this sub-committee should be a Minister not in charge of one of the great Departments of State except on those occasions when the Prime Minister is himself present.

6. Among the duties of the Standing Joint Defence Sub-Committee of the C.I.D. should be included the following:—

To examine—(a) The Imperial organisation for defence; (b) the Estimates, in draft, with a view to ensuring due economy and efficiency; (c) our Imperial responsibilities from the point of view of defence; (d) the effect of scientific progress and inventions; (e) the problems of strategy and logistics; (f) the proposals of the League of Nations.

It is understood that the Prime Minister and Mr. Bonar Law expressed themselves generally in favour of the principles of the proposals, and stated that the memorandum would be discussed at a meeting of the Committee of Imperial Defence, which will be held very shortly.

The Marriage of Sir F. H. Sykes

By an unfortunate printer's error in the last issue of *FLIGHT*, the date of the wedding of Major-Gen. Sir F. H. Sykes was given as May 3. This date should, of course, have been June 3.

Zeppelins for America?

It is said that an American company is seeking to purchase the patents and secrets covering the building of Zeppelin airships. This may be another version of the story that Mr. Henry Ford is to build rigid airships in the U.S.

AIRISMS FROM THE FOUR WINDS

FLIGHT's telephone No. at the Olympia Aero Show, July 9-20, will be "Hammersmith 2110."

FILMS of Famous Flights may be looked for at the Olympia Aero Show, as an item in the "exhibits" of the Air Ministry.

THAT the Olympia Aero Show will help along the upward curve in the future of aviation, should be evident from the fact that deputations and representatives are being sent to the exhibition by the Japanese, Swedish, Polish, Dutch, Belgian,

FOLLOWING up his historic and very sporting non-stop flight from London to Turin on a 35 h.p. (Green) Avro Baby, Bert Hinkler has once more demonstrated that British pluck, coupled with British goods, is still on top. On reaching Turin he made every effort to replenish his petrol and oil supply—he still had about 5 gallons of petrol left!—and resume his journey on to Rome. Owing to the sundry irritating and trivial delays that so often occur on these occasions, it was somewhat late by the time he could have got going again, so he decided to make a start in the morning. Then



A Sport from the Start: A Family Affair: Bert Hinkler (in the centre of gravity) and his home-built glider, with which he experimented in Australia in the early days of flying!

Canadian, Brazilian, Australian Commonwealth, Queensland, Argentine, Roumanian, French, Victoria, Tasmanian, Peru and Greek governments.

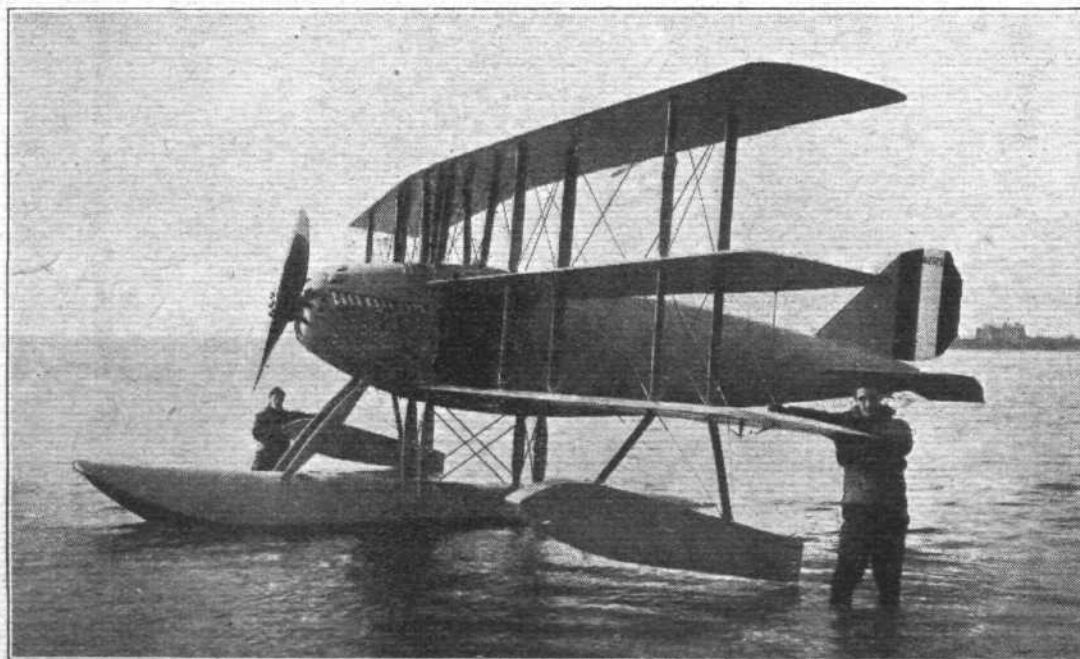
In Chatham Cemetery the memorial in granite to the Brothers McCudden, R.A.F., who were killed during the War, has now been erected. This heroic trio of brothers, it will be remembered, comprised Maj. Thomas McCudden, Sec. Lieut. McCudden and Flight-Sergt. McCudden. In addition, the name of a brother-in-law, who was killed in the explosion on the *Princess Irene* in the Medway, appears on the memorial.

bad weather set in—making an attempt to fly to Rome, via the Apennines, decidedly risky, and it was not until Friday, June 4, that he got away, Rome being reached after a flight of 6½ hours against a head wind.

Now, seeing that flying over the Near East at the present moment is not deemed desirable by our Government, Bert Hinkler realised that he would have to remain waggling his elevators at Rome or, should he proceed a bit further, at Cairo, until the clouds (political) rolled by, before he could resume his aerial return home to Australia.

The World's Fastest Hydroaeroplane: The Curtiss "Wasp," equipped with pontoons, which established a new world's record in recent Navy trials at Rockaway, L.I., by travelling at the rate of 138 m.p.h., piloted by Roland Rohlfs. It is the same machine in which he established new world's records for altitude and climb at Roosevelt Field last September. It is now the property of the U.S. Navy, and will be used at Hampton Roads, Va., for training purposes. The former world's hydroaeroplane record was 126 miles per hour, held by the Curtiss HA hydro. The equipment of the "Wasp" was the Curtiss 12-cylinder 400 h.p. motor

Curtiss Aero photo.





FURTHERMORE, inasmuch as the question of funds was a serious consideration—it must be remembered that this is a purely private venture entirely unsupported, as yet, from outside—he wisely decided that if there was any elevator waggling to be done he would rather do it over here. He also wished, in connection with the wonderful little engine, to have certain details, suggested by this preliminary effort, looked to over here.

AND so he is back in England. He, on his 35 h.p (Green) Baby Avro, arrived last week, *via* Nice, Paris, Croydon and Hamble. But more of this anon.

INCIDENTALLY this change in Mr. Hinkler's plans will give all interested an opportunity of seeing his "pocket" outfit, as the machine will be on view at the Olympia Aero Show, July 9-20.

ON April 19 the report of the Advisory Committee on Civil Aviation, of which Lord Weir is Chairman, was completed. According to the Dual Secretary for War and the Air, "the recommendations of the Committee are at the present moment under consideration."

Surely two months is a pretty long spell for so important a subject to be held up.

A "MOOT"—presumably a sort of "supposing" stunt—was held on Monday night in Gray's Inn Hall, before Mr. Justice Darling, when the following problem was argued to a finish: "Nokes, an airman, flying over the field of Styles, a tenant for years, dropped a lighted pipe which fell on, and ignited, a stack of hay there which Styles had made. The Government had requisitioned the hay, but had not removed or paid for any of it. In an action, Styles *v.* Nokes, judgment has been given against Nokes for a sum equivalent to the market price of the hay at the time of the burning of it. Nokes appeals."

MR. JUSTICE DARLING, in the course of his judgment, said that for an airman to take a lighted pipe and smoke it when flying at a point where if it fell it would fall by gravitation to the earth instead of to the moon, to allow it to fall or not to prevent it to fall—that was in itself *prima facie* negligence. If the pipe fell to earth and set fire to a haystack or did any other damage the person injured was entitled to an action to recover damages for negligence.

The matter was complicated by the fact that Styles had parted with something which he had of right in the hay. The Government had requisitioned the hay. Styles was a caretaker or a bailee for the Government, and was entitled to sue for the loss of the hay and to recover the market price. The damages would not go into his own pocket; but he would be a trustee for the Government, and as such was entitled to receive the value of the property at the time he brought his action. The case had been dealt with on the question of negligence alone. There had not been time to go into the question of trespass. The appeal must be dismissed.

THOSE fires at Cranwell Aerodrome, to which we referred last week, appear to be developing into pretty unpleasant coincidences, as still another similar episode is reported from Sleaford as having "happened" on June 11. On that evening it appears an outbreak of fire was discovered in Hut 86. With the aid of hand fire appliances it was extinguished. It appears that a magazine candle had been placed in a locker in such a position that the flame would eventually come into contact with a quantity of loose paper impregnated with petrol or some other inflammable agent. Under these circumstances it looks uncommonly as if some maniac is roaming around the camp, and the enquiry instituted should rather resolve itself into a case for police investigation. It is little comfort to learn that the damage previously done will amount to £175,000 *only*, instead of the £250,000 as originally estimated!

HAVING songs by Madame Melba thrown in gratis for the admission fee of one shilling to the wonderful Crystal Palace War Museum is a bit of a shock these ca'-canny and profiteering days. Therefore, visitors to the exhibition on Tuesday evening last must count themselves fortunate in being able to indulge in this extra turn without cost, and at the same time appreciate a practical demonstration of another of the great wonders of the age running neck and neck with aviation—wireless telephony. This little episode is another score due to the enterprise of the *Daily Mail* in conjunction with the Marconi Company. The items, accompanied by the piano, selected by Madame Melba were "Home, Sweet Home," in English; a song from "La Bohème," in Italian;

"Nymphes et Silvains," in French; and the notice of the performance issued by the Air Ministry was as follows: "Visitors to the Royal Air Force Section of the Imperial War Museum, Crystal Palace, will be given an opportunity of listening to Dame Nellie Melba's singing, when she gives some of her best-known songs by wireless telephony from Chelmsford. An R.A.F. wireless receiving set has now been fitted in the gallery of the Museum and visitors interested should go there between 7 and 8 p.m. tomorrow night (Tuesday) if they wish to have an opportunity of hearing Dame Nellie Melba."

WONDER what those ten thousand bees in an ordinary straw skip, brought the other day from Holland on the Amsterdam-London air-service, thought of their experience. Dutch bees have a reputation for being pretty hot stuff anyway, and we can imagine that when that skip was opened, the bees began to ——. No, it was the onlookers that did the skipping, we should say, judging by personal experiences in studying this particular model of mono.

TWENTY cats have been attached to the R.A.F. parachute and clothing store at Kidbrooke, Kent, which has been overrun with mice. The Air Ministry approves "the expenditure of 4d. per cat per week on food."

There is speculation at Kidbrooke, according to the *Daily Mail*, as to whether "separation allowance" will be issued.

A CORRESPONDENT writes: "We have in our office a large poster which says we are exhibiting at the forthcoming Aero Show, and someone on the staff, evidently suffering in his finer feelings, has affixed to the lower edge of the poster a sheet of paper on which are the words, 'But we are not responsible for this poster!' In view of the fact that this pictorial effort is to be used as a means of attracting the general public to an exhibition which is above all others modern in character, one can only wonder whose artistic conception it was. The principal object is a large female of a type which has been crudely described by our office boy as 'beefy,' draped—more or less—in something which looks like a red blanket. Instead of stockings she wears above the ankles a pair of white wings, and her red hair streams wildly in the breeze against a violent mustard sky. She is stepping unconcerned into the propeller of a machine. It is not easy to say what sort of a machine it is, but the kind of pilot in charge may be judged by the fact that he is obviously stunting down Addison Road. We know it must be Addison Road because Olympia may be seen in the back-ground. It is mid-Victorian lithographic art, a long way off its best, and reflects little credit on those responsible."

OUR correspondent's letter continues:—"We have also been supplied with another advertisement of the forthcoming Show, this time in the form of a small show-card about 12 inches by 10. Its colouring is distinctly up-to-date as compared with the poster above-mentioned. There is a dead black sky and foreground, and in the centre is a machine of most unconventional appearance. Its *fuselage* is pale grey, its planes are purple, and the struts and under-carriage are scarlet, while the wheels are of a character which can only be described as 'Jazz.' In the distance may be seen a Cambridge-blue Olympia behind an Oxford-blue fence—or it might be a range of hills. The pilot is unlike any pilot ever certified by our Air Ministry, and is probably a female. She is very tall, with a yellow leather coat, brown knee-breeches, high boots, and contact knees. Her flying-cap is red, and has a curly something depending from it at the back about 3 feet long. There have been many guesses at our office as to what exactly she is doing, but the general impression is that she is scratching her head with a banana. However, in spite of these attempts at publicity, I hope the Show may be the success we should all like it to be."

A WEEKLY contemporary suggests that the chief training establishment of the R.A.F. is being set up at Cranwell because that is the nearest available site to the headquarters of the cloth-making industry! A right merry thrust, withal, at those who are more expert at designing new clothes than new machines.

By the way, this seems a suitable moment for warning would-be humorists against sending us jokes about "Cram-well."

THE Royal Aero Club has been in the hands of painters and decorators for so long that one member suggests that the term "Aviation Pioneer" should mean anyone who has been connected with the Club long enough to remember the time before the painters first came.

THE ROYAL AIR FORCE

London Gazette, June 8

Permanent and Short Service Commissions

The notification in *Gazette*, Aug. 1, 1919, appointing Maj. E. W. Norton, D.S.C. (A.), to a perm. commn. is cancelled, and this officer is granted a short service commn., with effect from Aug. 1, 1918.

The following officers have been granted short service commns. in ranks stated. Except where otherwise stated, commns. will have effect from June 8, and officers will retain their seniority in substantive rank last held by them prior to grant of short service commn., except that officers gazetted to a rank lower than their previous substantive rank will be placed at head of list of officers of rank to which they are now gazetted, and will retain seniority relative to each other in accordance with their previous position on gradation list:—

Flying Officer (from Flight-Lieut.).—R. A. Birkbeck, D.F.C. (A.).

Flying Officers.—W. Bourne (T.), A. S. Budge (Ad.), with effect from Oct. 10, 1919; G. B. Holmes (A.), with effect from May 31, W. E. Theak (A.), with effect from May 28.

Observer Officers.—A. D. Rogers, A.F.C., with effect from May 27; A. C. Walker.

The notification in *Gazette*, May 4, relative to Flying Officer H. J. Saker (A.) is cancelled, and that in *Gazette*, March 30, appointing this officer to a short service commn. stands.

The notifications appearing in *Gazette* of dates indicated below, appointing following officers to short service commissions, are cancelled:—Flying Officer E. F. Thorpe (T.) (Sept. 12, 1919); Flight-Lieut. C. T. Lally, M.C., A.F.C. (A.) (Dec. 12, 1919); Flying Officer P. R. Blythe (A.) (May 18).

Rescinding

The name of Observer Officer John Eric MacLennan is as now described, and not MacLellan, as stated in notification in *Gazette*, May 18.

Flying Branch

Sec. Lieut. A. A. Adams to be Lieut. (June 24, 1919).

Pilot Officers to be Flying Officers:—R. R. MacNaughton (since demobilised) (Sept. 5, 1919); D. B. C. Fulton (Nov. 16, 1919).

Pilot Officer F. C. Jenner (O.) to be Observer Officer (Jan. 27).

Flying Officer W. L. Roberts, M.C. (Lieut., Middx. R.), relinquishes his temp. R.A.F. commn. on return to Army Duty (June 1).

(Then follow the names of 16 officers who are transferred to the Unemployed List under various dates.)

Capt. H. G. Boswell, D.S.O., resigns his R.A.F. commn. (March 22, 1919).

The following Sec. Lieuts. relinquish their commns. on account of ill-health contracted on active service, and are permitted to retain their rank:—T. B. Sedgwick (May 28); A. A. Partridge (May 29).

The notification in *Gazette* of May 4 concerning Flying Officer E. G. Baxter is cancelled.

The notification in *Gazette* of May 11 concerning Sec. Lieut. J. Erskine is cancelled (notification in *Gazette* of Feb. 25, 1919, to stand).

The notification in *Gazette* of March 21, 1919, concerning Capt. H. G. Boswell, D.S.C., is cancelled.

Administrative Branch

Sec. Lieut. A. H. Simpson to be Lieut. (April 5, 1919) (since relinquished commn.).

Pilot Officer E. J. Broadbent to be Flying Officer (March 23).

Flying Officer H. C. Costobadie, M.C. (Lieut., Rifle Brigade), relinquishes his temp. R.A.F. commn. on return to Army duty (April 8, 1919).

(Then follow the names of 6 officers who are transferred to the Unemployed List under various dates.)

Sec. Lieut. H. R. Boaston relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank (May 29).

Technical Branch

Sec. Lieut. E. J. Wilkins to be Lieut., Grade (A.) (Feb. 24, 1919).

Pilot Officer W. K. Yarnold to be Flying Officer (Grade (A.) (Sept. 27, 1919).

Sec. Lieut. E. Hiscock to be Lieut., Grade (B.) (Nov. 30, 1918).

Pilot Officer E. J. Spearing to be Flying Officer, Grade (B.) (Jan. 1).

Pilot Officers to be Flying Officers:—S. R. Gellert (substituted for notification in *Gazette* of March 30), E. F. Thorpe, J. Wesley (Oct. 1, 1919). (Then follow the names of 13 officers who are transferred to the Unemployed List under various dates.)

Medical Branch

Flying Officer C. T. O'Neill to be Flight-Lieut. (June 2).
Transferred to the unemployed list:—2 officers.

Dental Branch

Flight-Lieut. C. L. Colbran to be acting Squad.-Ldr. while employed as Squad.-Ldr. (Oct. 25, 1919).

London Gazette, June 11

Flying Branch

P.F.O. D. K. Falkner (late R.N.A.S.) is granted a temp. commn. as Sec. Lieut. (S.); Nov. 8, 1918.

(Then follow the names of 11 officers who are transfd. to the Unemployed List under various dates.)

Sec. Lieut. C. D. Ball, M.M., relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; June 9.

Flight-Lieut. (Hon. Squadr. Ldr.) K. B. S. Greig (Paymr. Lieut.-Com., R.N.) relinquishes his temp. R.A.F. commn. on retiring from the R.N., and is permitted to retain rank of Maj.; May 29.

Lieut. G. R. Hunter, M.C. (Lieut., Cam'n Highrs.), relinquishes his temp. R.A.F. commn. on retirement from the Army, and is permitted to retain rank of Lieut.; June 12.

Lieut. H. M. Hopwood (late Lieut., 4th R. Ir. Dragoon Gds.) resigns his R.A.F. commn.; Nov. 22, 1919.

Pilot Officer J. G. Newton is cashiered by sentence of General Court-Martial; Feb. 14.

The notifications in *Gazettes* of Oct. 1, 1918, and Oct. 8, 1918, concerning Sec. Lieut. A. W. Johnston should read Sec. Lieut. Amos Walter Johnston.

The surname of Lieut. R. Speirs is as now described and not as stated in *Gazette* of June 4.

Administrative Branch

Squadron Leader A. R. Woodland (Maj. Qtr-Mtr., Shrop. L.I.) relinquishes his temp. R.A.F. commn. on return to Army duty; May 31.

Sec. Lieut. J. Birtwistle is transfd. to the Unemployed List; Oct. 12, 1919.

Sec. Lieut. P. B. Brewster relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; May 1.

Lieut. H. C. Williamson (Lieut., Gen. List) relinquishes his temp. R.A.F. commn. on retirement from the Army, and is granted the rank of Capt.; June 12.

Technical Branch

Flying Officer (actg. Flight Lieut.) L. J. Stuart to be Flying Officer Grade (B), from Grade (A) (April 20), and relinquishes the actg. rank of Flight Lieut. on ceasing to be employed as Flight Lieut.; April 20.

(Then follow the names of 8 officers who are transfd. to the Unemployed List under various dates.)

Capt. G. Gude, O.B.E., relinquishes his commn. on account of ill-health contracted on active service, and is granted the rank of Maj.; June 4.

Lieut. A. C. Hill (Sec. Lieut., Gen. List) relinquishes his temp. R.A.F. commn. on retirement from the Army, and is permitted to retain the rank of Lieut.; June 11.

Medical Branch

Two officers transfd. to the Unemployed List.

Memoranda

(Then follow the names of 29 Cadets granted hon. commns. as Sec. Lieuts.) Prob. Flight Officer F. T. Pamment is granted an honorary commn. as Sec. Lieut.; Sept. 11, 1919.

The Christian names of Group Capt. Eugene Louis Gerrard, C.M.G., D.S.O., are as now described, and not as stated in the *Gazette* of June 4.

The notification in the *Gazette* of Dec. 16, 1919, concerning P.F.O. D. K. Falkner is cancelled.

AVIATION IN PARLIAMENT

German Airships

LIEUT.-COMMANDER KENWORTHY, on June 8, asked the Secretary of State for Air what is intended to be done with the ex-German rigid airship L. 71; will it eventually be used for commercial, naval, or military purposes; and, if commissioned for Government use, what will be the estimated annual cost to the Crown?

VISCOUNT CURZON asked the Secretary of State for Air whether L. 71 Zeppelin airship has as yet been surrendered; where she will be stationed and to what use it is proposed to put this airship; how many airships are now under construction; and what use it is proposed to make of them when completed?

MR. CHURCHILL: The airship L. 71 has not yet been surrendered. It is expected that she will be handed over within the next few weeks, and the intention is that she should be housed in the first instance at Pulham, Norfolk, Airship Station. Airships under construction at the end of the War and still completing are "R.36," "R.37," "R.38," and "R.80." Of these the "R.38" will be handed over under arrangements made for sale to the United States of America when completed. Work on the other three is proceeding slowly in anticipation of an arrangement being made for their employment for commercial purposes. This question, it is hoped, will shortly be decided. The ultimate disposal of "L. 71" will also be settled in all probability by the same decision. In any case, it is anticipated that information of great value will be obtained from the trials of this German airship. The annual cost to the Crown, if this vessel were to be commissioned for Government use, will be very largely dependent on the amount of airship material obtainable under the terms of the Peace Treaty from Germany and the present condition of the ship. It is, therefore, impossible at present to give any useful estimate of the amount.

MR. HOUTON: Can the right hon. gentleman say why this airship has not already been handed over by Germany? Was it not completed?

MR. CHURCHILL: Yes. I think it was completed. We are not at all dissatisfied with the way they are carrying out this portion of the Treaty.

Polegate Airship Station

MR. GWYNNE on June 9, asked the Secretary of State for Air if he is aware that a draft of men has recently been billeted at Polegate and Willington whilst working at the Polegate airship station, in spite of the fact that

there is accommodation for large numbers of men at the aerodrome; and whether it is reasonable, in view of the shortage of housing accommodation, to compulsorily billet men in adjoining villages, and so deprive others from obtaining accommodation when excellent huts are standing empty?

SIR A. WILLIAMSON: The airship station at Polegate was evacuated on February 6, 1920, and handed over to the Disposal Board of the Ministry of Munitions, in accordance with the undertaking given by the Under-Secretary of State for Air in his answer to my hon. friend's question on October 29, last. Almost immediately after this had been done, requests for certain airship stores were received from Dominion Governments. On the receipt of these requests, the station was withdrawn from the Disposal Board, and the Governments concerned were asked to define more exactly the stores which they required. On the receipt of this information, a party of two officers and 45 men was sent to pack the stores required, and it was considered that, owing to the short period during which this party would be employed at Polegate, it would be cheaper and quicker to billet them than to re-open the station, with the consequent provision of bedding, barrack stores, rations fuel, light, etc., in addition to the extra personnel which it would have been necessary to send to make these arrangements, and which the Air Force can ill spare at present.

MR. GWYNNE: For how long will these men be there?

SIR A. WILLIAMSON: I am informed a short time.

R.A.F. Officers and Swords

MR. THOMAS asked the Secretary of State for Air whether all officers of the R.A.F. have been ordered to equip themselves with swords; and what is the approximate cost of these weapons?

SIR A. WILLIAMSON: The provision of full-dress uniform (of which a sword forms part) is at present optional. The wearing of the sword with any other R.A.F. uniform has not been authorised, and no order has been issued compelling officers of the Royal Air Force to equip themselves with swords. In reply to the second part of the question, the cost of sword, scabbard, belt and slings, together with sword knot, is approximately £11.

LIEUT.-COM. KENWORTHY: May I ask if the senior officers of this Force will have to wear spurs as well?

MR. PALMER: Is not this a ridiculous waste of money at a time when we are all anxious to save money?

Sir A. Williamson: I cannot see that there is any waste of money, as it is optional.

Mr. Palmer: Is it optional? Do not men in the Force copy each other, and if one man buys a sword another man feels compelled to buy a sword also?

Mr. Churchill: It seems to me to be a matter which could much better be dealt with in Debate.

Mr. Palmer: Am I not in order in asking a question without being called to order by the right hon. gentleman?

Mr. Churchill: I was not in the least challenging the hon. gentleman on the point of Order, only as a matter of the general convenience of the House.

Capt. W. Benn: Are Air officers permitted to attend ceremonial occasions if they have not got swords?

Mr. Churchill: No, I think not. It may be well that the House would like an opportunity of debating this rather difficult question, about which there is necessarily and admittedly a great difference of opinion. Personally, I do not shrink from such a discussion, although I do not assume that any discussion will produce unanimity of opinion. Still, the reasons for the action would be made clear. I am certain that no advantage will be reached by a number of interesting questions at this stage.

Airship Station, Polegate

MR. GWYNNE asked the Secretary of State for Air why the airship station at Polegate has not yet been closed down in view of the fact that it was stated in the House in October last that it was then in the course of being evacuated; whether his Department intend to retain it permanently; what is the cost of maintaining it; how many men are employed there; and with what object?

Sir A. Williamson: The airship station at Polegate was disbanded on February 6, 1920, and has been in the hands of two caretakers until recently. It is not intended to retain this station permanently. The cost of maintenance, therefore, includes nothing but the pay of the two caretakers, that is, a sum of £5 10s. per week. A working party of 45 men and 2 officers has, however, recently been sent there to pack and dispatch certain airships and stores, a part of a gift to Colonial and Dominion Governments, the cost of the work being charged to the Governments concerned. When this work is completed the station will be handed over to the Disposal Board.

Billeting Allowance

MR. GWYNNE asked the Secretary of State for Air what is the present rate allowed for men who are compulsorily billeted?

Sir A. Williamson: The new rate as fixed by the Army and Air Force (Annual) Act, 1920, for accommodation provided by the keeper of a victualling house is 4s. 2d. a day, made up as follows:—

	s.	d.
Lodging and attendance	0	10
Breakfast	0	10
Dinner	2	0
Supper	0	6

Seaplane Station, Lee-on-Solent

SIR J. DAVIDSON asked the Secretary of State for Air whether it is the intention of the Government to retain Lee-on-Solent as an air station; how long this aerodrome has been in a state of disuse; what is the cost of its retention in its present condition; what has been the cost to the State of retaining this aerodrome from January 1, 1919, to the present date; what sum of money will be required to restore it to a serviceable condition; whether the inhabitants who have been turned out of their homes have

received full compensation; on what scale such compensation has been paid, whether by way of rent or purchase; and the names of such inhabitants?

Sir A. Williamson: It is intended to maintain a seaplane station at Lee-on-Solent. Flying has not been going on there since February, 1919, but the station has not been in a state of disuse, and flying will shortly recommence. The structural upkeep of the station in its present condition is estimated to cost about £2,500 per annum. The buildings are already in serviceable condition, but structural alterations to improve and extend the accommodation are being considered. Payments have been made in respect of the following properties requisitioned under the Defence of the Realm Act, and proposals for the final purchase of these properties are receiving close attention with a view to an early settlement:—

Norbury—£3 3s. 4d. per month, paid up to May 5, 1920, to Mrs. M. H. Haynes.

Brambles—£9 4s. 8d. per month, paid up to May 5, 1920, to Lieut.-Col. Douglas.

Westcliffe—£317 18s. 4d. per annum, paid up to May 1, 1920, to Mrs. L. J. Jewell.

No claim has yet been received in respect of Wykeham Hall from the owner, Mr. Webb. With regard to the fourth part of the question, the total cost to the State from January 1, 1919, is being worked out, and I will communicate the figures to my hon. and gallant friend.

Air Navigation

THE House of Lords went into Committee on the Air Navigation Bill, the Earl of Donoughmore in the Chair, on June 9.

On Clause 8, which deals with the establishment of aerodromes by the Air Council and local authorities, amendments, moved by the Marquess of Londonderry, to provide that local authorities should be able to rent land for aerodromes instead of being obliged to purchase the land, and also to acquire land outside their area, if necessary, were agreed to.

On the motion of the Marquess of Londonderry, the City of London was included among the local authorities who may establish aerodromes. At present, he said, facilities did not seem to exist for the establishment of an aerodrome within the City, but developments might take place in aviation which would change the position in that respect.

The clause, as amended, was agreed to.

On Clause 9 (Trespass, Nuisance, Responsibility for Damage, etc.) Lord Montagu drew attention to the danger of the "air hog."

The following proviso was agreed to on the motion of the Marquess of Londonderry:—"Provided that, where any damages recoverable from the owner of an aircraft under this section arose from damage or loss caused by the wrongful or negligent action or omission of any person carried in the aircraft, nothing in this section shall prejudice or affect any right of the owner to recover from that person the amount of such damages."

"For the purposes of this section, the expression 'owner' in relation to aircraft includes any person to whom the aircraft is demised."

On the motion of Lord Montagu, sub-section (4) of Clause 16 ("Provisions as to Orders in Council")—"Section 1 of the Rules Publication Act, 1893, shall not apply to any Order made under this Act."—was omitted.

An amendment by Lord Glenarthur, acting on behalf of the Dock and Harbours Committee, extending the saving provision of Clause 17 to the rights, powers, or privilege of any "local" as well as any "general" light-house authority, was agreed to.

International Aero Exhibition, Olympia

THE following firms have now secured space, and they should be added to the list given in our issue of last week:—

- Stand No.
- 93 AVIATION INSURANCE ASSOCIATION, 1, Royal Exchange Avenue, E.C. 3.
 - 78 TAMPIER RENE BLOC TUBE CARBURETTORS, Danemere Street, Putney, S.W. 15.
 - 35 TAN SAD WORKS, 9, Freeman Street, Birmingham.
 - 16 BRITISH ENGINEERING STANDARDS ASSOCIATION, 28, Victoria Street, S.W. 1.
 - 36 NORTHERN ENGINEERS SUPPLY CO., 64, John Street, Sheffield.
 - JOHN THOMPSON, MOTOR PRESSINGS, LTD., Ettingshall, Wolverhampton.

Capt. Matthews in Australia

Capt. Matthews and Sergt. Kay, who were compelled to give up their attempt to fly from England to Australia owing to the crash while flying over the island of Bali on April 17, arrived at Sydney on June 9, by steamer from Java.

Roget Flies to Warsaw

THE tour of Europe which Lieut. Roget has been arranging for some months, commenced on June 9, when the aviator left Villacoublay at 5.10 a.m. on his Breguet machine, with the intention of making a non-stop trip to Warsaw. He, however, had to land at Johannisthal at 11 a.m. He left Berlin at noon the next day, but he had to come down at Posen for lubricating oil. He got away again at 5 o'clock, and landed at Warsaw at 7 p.m.

Ten Miles by Parachute

ANOTHER claim to a record comes from San Antonio, Texas, this time for the world's record parachute leap. The performance was made on June 9, by Lieut. John N. Wilson, of the U.S. Aviation Service, when he jumped from an aeroplane 19,800 ft. up, and came to earth like "a man from Mars" after drifting more than 10 miles.

Flying Tours to Verdun

DURING the touring season, the Compagnie des Messageries Aériennes are running a service between Le Bourget and Verdun. Leaving Le Bourget at 8 a.m., the

tourists reach Verdun at 9.45, their route being by Château Thierry, the Marne Valley, Rheims and the Argonne. Arrived at Verdun, a tour of the forts is made by motor, and the return journey by air started at 5 p.m., Le Bourget being reached under ordinary conditions at 6.45 p.m.

Air Mails in Belgian Congo

WORD comes from the Governor-General of the Belgian Congo that the service between Kinshasa and Coquilhatville is now running regularly twice a month, carrying goods and passengers.

A Station in the White Sea

THE municipal council of Lubeck has voted 40,000 marks for the creation of an aeronautic station in the White Sea.

Germany Wants Balkan Traffic

A REPRESENTATIVE of a German concern has recently been in Belgrade trying to make arrangements for an aerial service between Hamburg and Belgrade. It is anticipated that the journey would take 12 hours, while accommodation will be provided for ten to twelve passengers.

Aerial Post in Algiers

ON his Nieuport hydroplane, Sadi Lecointe, with Capt. Coli and his mechanic carried out a trial postal service between Bizerta and Algiers on June 6. Starting at 11.25 they came down at Algiers at 16.55 p.m.

H.P. Continental Services

FOR the period from September 2, 1919, to June 5, 1920, the Handley Page Continental air services (in conjunction with Cie. Messageries Aériennes) carried 1,510 passengers, 87,439 lbs. of freight, while the aggregate distance covered was 115,097 miles.

A Handley Page in India

ALTHOUGH the Handley Page aeroplanes have only been operating in India for a short time, they have already carried there 1,245 passengers, this total not including the pilots and mechanics. Amongst well-known passengers who have flown in India in Handley Page aeroplanes are: The General Officer Commanding Presidency Brigade, Gen. James and Staff, Admiral Sir H. Tothill and Lady Tothill, and Maharaja Thakore Saheb of Morvi.

THE "REVERGEN" TOWN-GAS-FIRED FURNACE

An Economical System for the Rapid Heating of Draw-Forgings

ALTHOUGH the use of town gas for general forge and furnace work has been shown to be advantageous from nearly every point of view theoretically, it has hitherto proved uncommercial because of the enormous flue losses of heat units. The problem, therefore, has been essentially one of thinking in terms of heat units, and endeavouring to go very much further toward their conservation than has so far been achieved.

This seems to be the accomplished object in the case of the new "Revergen" furnace, lately devised by the Davis Furnace Co.—of the Diamond Foundry, Luton, Beds, and 6, Rathbone Place, London, W.—for single or multiple rapid-draw forgings, as well as for annealing. This latest development has two open slot-like mouths, each provided with a rest-bar, and is designed to work upon the same system as combined reverberatory and heat-regenerative furnaces: hence the name "Rever-gen."

Built on the double-hearth system, the method of firing is from a range of faucet-controlled gas jets fed from a common pipe, direct into the furnace. Simultaneous carburization at the jet nozzles is embodied with an air current drawn upward through the spaces between the brickwork of a hearth, built checker-fashion: the resulting flame-current—especially since the nozzles are protected with a baffle line of brickwork—being naturally reverberatory, provided that the flues run downward.

But it is just in this regard that the enormous heat wastage by way of these flues has been created; so that one could not attain anything like high temperatures—such as 1,500° C.—economically. Hence, in the Revergen, it has been sought to employ the well-known heat-storage capacity of masses of fire-brick, in the first instance—for which purpose the additionally-exposed surfaces of checker construction are singularly favourable—and to extend this capacity as far as possible by deepening the mass of each hearth. Thus it will be evident that the flame-gases, passing downward through the checker-spaces—if acting as flues—would part with their heat to the mass *en route*.

The checker-spaces in the mass are used in an air-draught capacity, instead of merely as flues, and the draught is forced, so that instead of remaining inert, the stored heat units are rapidly extracted and drawn in the one upward direction into the furnace again. The obvious alternative conclusions are that the flame from the gas jets can be reduced heavily,

or that their normal output suffices to raise much higher temperatures.

This alternative function of flues and forced draught has been effected in the case of the Revergen furnace, first by the use of the double hearth-mass, and, mechanically, by the provision of a huge overhead four-way cock into which the main air-supply pipe runs, as from an electrically-driven blower-fan, at one angle—S.W.—while opposite—N.E.—is the main flue-outlet, with the branch-pipes at the other N.W. and S.E. angles, leading to and from the bottom of the hearth-masses, by way of tapered manifolds, each branch acting as a down-take in its air-supply function to its mass, or as the uptake from it—and hence to the flue outlet through the cock—in the flue function, according to the direction in which the four-way cock is half-turned. The taper of the manifold, of course, slightly increases and regularises the air-draught velocity, and correspondingly eases the escape of the flue-gases. Also, each gas supply-pipe has its own cock, so connected with the four-way cock control as fully to cut-out the burners on the side in flue-function and heat-storage, and as fully to open up supply to those on the other side, which is in air-draught and heat recovery.

Thus the final result is—from the full change-over every six to ten minutes—that while the furnace temperature may be anything up to 1,650° C., that of the gases at the flue outlet is never more than about 100° C.

The hearth-floors are, of course, solid, as the air emerges from, or the flue gases escape by way of, the perforations behind the burner-baffle line on either side, from or to the checker-work spaces in the storage-regenerator masses beneath. But they are built with a slight angle from the baffles to the longitudinal central line to a slag-plug hole beneath the middle of each mouth of the furnace. Apart, too, from all other advantages, it is claimed—apparently with good reason—that the strong current action has a singularly cleansing effect on the iron whilst heating.

There can be, at any rate, little question about the rapidity of this Revergen furnace for quantity-production of forged pieces, such as axles and other parts used in automobile construction; for when in full action, with four minutes or less to a primrose white heat at the draw, the capacity of each "mouth" would keep half-a-dozen power hammers fully supplied, practically as fast as operators working in turn could handle the pieces.

LEGAL INTELLIGENCE

The Tarrant Triplane Accident

THE Court of Appeal, consisting of Lord Justice Bankes, Warrington and Scrutton, on June 9, dismissed the underwriters' appeal from the judgment of Mr. Justice Roche in the action brought by the administrator of the estate of Capt. Dunn, who died after an accident at the trial flight of the Tarrant triplane at Farnborough on May 28, 1919.

The action was brought to recover £4,000 on a policy of insurance on the life of Capt. Dunn, and it was stated to be the first action which had arisen out of aviation insurance. The original action was reported in FLIGHT of January 29 last.

In the course of a lengthy judgment, Lord Justice Bankes said that a proposal form, made for personal accident insurance for pilots, contained a clause or note which had been relied on as expressly excluding the first flight from the insurance. The clause or note stated that "the first flight of a new aeroplane . . . not covered unless specially arranged for." Was the proposal a proposal on the part of the person who put it forward, with an intimation that he desired that the first flight of a new machine should be included? The proposal read as a whole did seem to convey clearly that what the proposer desired was to cover 12 hours of test flying from the beginning of the first flight. Then the question was whether it was accepted by the underwriters. The acceptance was found in the cover slip. The slip, as originally prepared by the brokers, contained the words: "during 12 hours' flight in the Tarrant machine . . . not exceeding a period of three months from date of first flight." Someone altered the words "during 12 hours' flight" to "during 12 hours' flying" and the words "three months from date of first flight" to "three months from date and time of first flight."

Therefore the appellants failed on the first branch of the case, either because the proposer did make the proposal sufficiently plain that he wished to cover the first flight and that was accepted by the underwriters, or if there was any

ambiguity the matter came within the principle of Bradley and Essex and Suffolk Accident Indemnity Society.

The second point taken by the appellant was that Capt. Barber said at the first interview on April 23 that he would not take this insurance except on the condition that the machine should not be flown at all until it had been passed as safe by Col. Bristow. Mr. Justice Roche had come to the conclusion that, in spite of what took place at the interview on April 23, Capt. Barber did ultimately intend to cover the first flight of the machine. The learned judge also came to the conclusion that it was not made sufficiently clear to Capt. Rawlings in the proposal of May 2 that Capt. Barber continued to insist on the condition that the machine should not be flown until it had received Capt. Bristow's approval. It was impossible to take a different view from that arrived at by the learned Judge on that point. The judgment appealed from must stand, and the appeal must be dismissed with costs.

Lord Justice Warrington and Lord Justice Scrutton concurred.

Heavy Fine for Alleged Low Flying

AT Bournemouth police court on June 10, Reginald Edmund Tollerfield, an air pilot, employed by the Bournemouth Aviation Co., answered two summonses taken out under the Air Navigation Regulations, 1919, one for flying over Bournemouth at a dangerously low altitude and the other for trick-flying over Bournemouth on May 9. Two R.A.F. officers gave evidence to the effect that defendant executed two Immelmann turns at an altitude of 500 to 600 ft. The defence was that the Immelmann turn was not trick-flying, but merely a quick way of turning. Defendant also stated that he did two Immelmann turns over the sea, and during his flight he was never under 1,500 ft. He could have glided down to the sands or to Meyrick Park had his engine failed. Mr. Tollerfield was fined £25 in each case—£50 in all—and costs.

MODEL AEROPLANES

By FJC/AMM

NOTE.—All communications should be addressed to the Model Editor

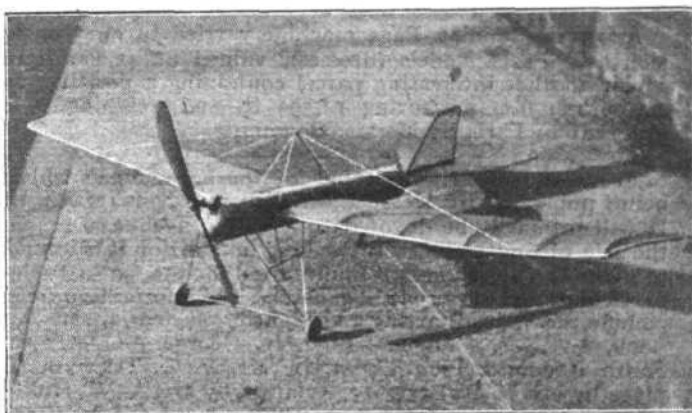
The Groves C.A. Plant in a Tractor Monoplane

SINCE writing the brief *résumé* of the compressed-air plant designed by Mr. H. H. Groves, which appeared in FLIGHT, April 1 issue, I have had an opportunity of building a machine to suit the plant. It is shown by the appended photograph. At the outset I should like to endorse the remarks I previously made regarding the plant, which I consider to be a great improvement on most of those at present on the market. The rotary valve throughout my experiments worked extremely sweetly, and there is only an infinitesimal amount of leakage in the engine—this, too, only at high pressure. I have had no trouble with the engine but a broken crankshaft, but this was in no way due to faulty design. The flimsiness apparent in so many C.A. motors is quite absent, and the whole motor is rigid, light, and free from vibration. Mr. Groves has promised, as a favour, to supply one to each reader desirous of possessing one, and I shall therefore be glad to forward any enquiries to the right quarter. The total weight of the plant is 14 oz. without the screw, and the thrust at full pressure nearly $6\frac{1}{2}$ oz., quite sufficient to fly a machine weighing two pounds or more. With a 1 in. bore foot pump the pressure averages about 1 lb. per stroke. I found that a pressure of 40 lbs. was sufficient to just fly the model without climb, thus proving that a pressure of 40 lbs. is sufficient to fly a machine, although it has been stated by others that a pressure of 50 lbs. was necessary for flight.

As has been previously mentioned, the machine has been designed on the double-acting principle. The cylinder heads are attached by means of buttress threads (to resist pressure), and altogether the plant is an engineering job, combining great power with lightness, compactness and strength. The drawings show the machine presented by the photograph, and I do not think simpler or lighter construction, commensurate with rigidity and strength, could have been used. The machine at the first flight collided with a roof, hence the broken crankshaft previously alluded to. The duration was in the neighbourhood of 45 secs., and since then 63 secs. has

been obtained. I have no doubt that with further tuning even better results will be obtained.

I used a rather novel form of construction in the planes, but this will be dealt with in a later issue. The wing section



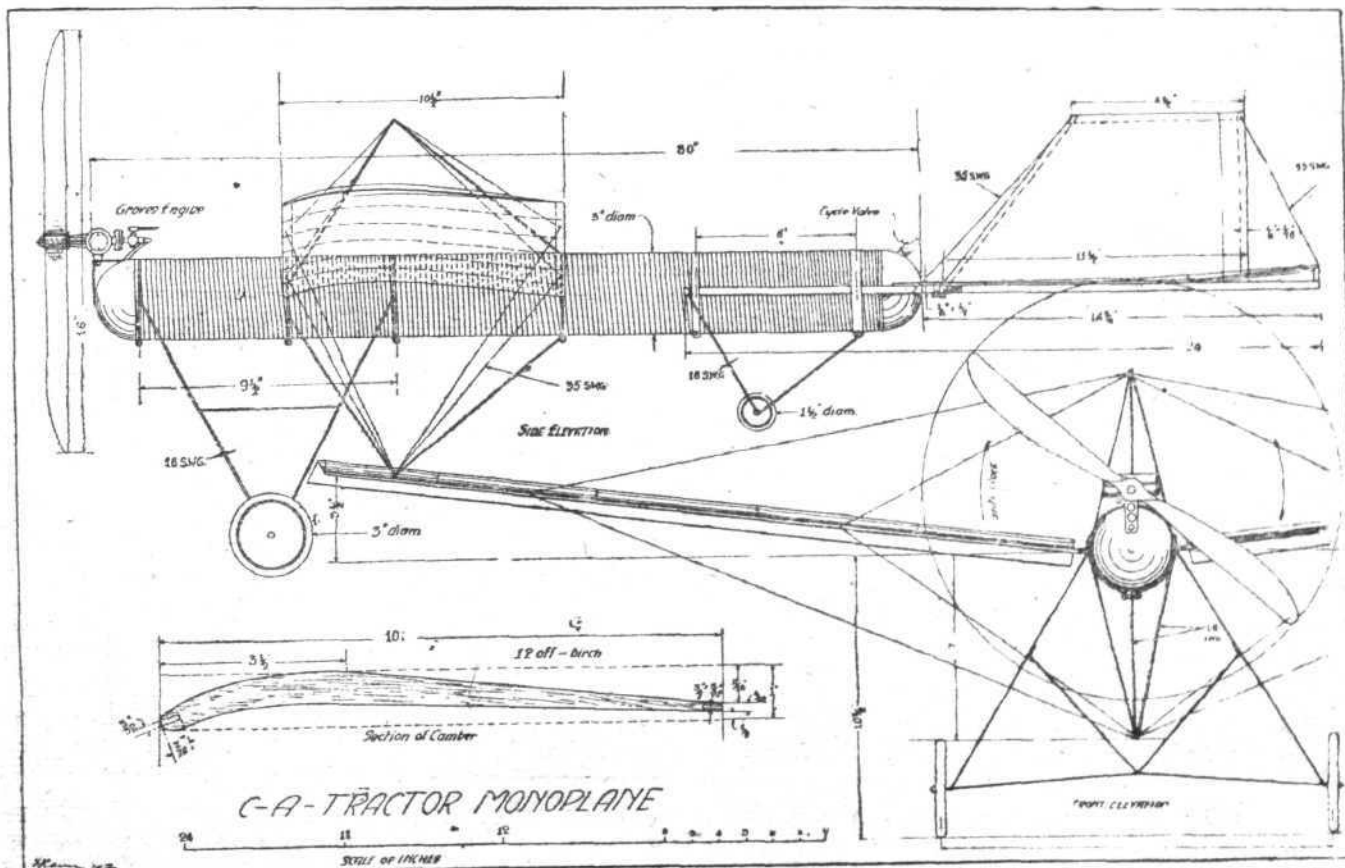
Tractor monoplane by Camm, driven by Groves
C. A. plant.

(something akin to a well-known full-size section) is here given; twelve such ribs will be required, each $\frac{1}{16}$ -in. thick and 1 in. wide, of birch. The slots are to admit the leading and trailing spars, which are of spruce.

(To be Continued)

Replies to Correspondents

W. T. NEWTON (Hither Green).—Sorry, but the preparation of the drawings would entail too much time, and is hardly of general interest. I shall, however, be pleased to assist you in any way within my power, and I wish you success in the undertaking.



SIDEWINDS

THE British Acetylene and Welding Association held their annual dinner on June 10 last, at the Holborn Restaurant, Mr. G. F. Mason, the newly-elected president, presiding. Mr. Lacy Downs proposed the success of the Association in a very able and humorous manner, and had a gratifying story to tell of the continued progress and headway the Association was making. Mr. Hoddle, senior, the oldest founder member of the Council, replied, stating they could rely upon his support as long as his health permitted; unfortunately, it had not been any too good of late. Many musical numbers were rendered, and much appreciated by the large gathering.

A HANDLEY PAGE commercial aeroplane on the London-Paris service carried recently a consignment of nine gallons of perfumes, valued at £505.

ANOTHER Handley Page machine carried in one consignment six Paris models (dresses), valued at 41,000 francs, whilst another interesting parcel containing a positive cinematograph film measuring 14,592 ft. and weighing 80 lbs. was sent to Paris by Messrs. Gaumonts.

Roadcraft is the title selected for the house-organ which is being published by Messrs. S. Smith and Sons (M.A.), Ltd. It will primarily be devoted to assisting agents to promote the sale of Smith's specialities, and in addition it is intended to make it a storehouse of information for the motor trade in particular, and motorists in general. The informative articles include the Smith Starting and Lighting System, by Mr. A. C. Lock, M.I.E.E.; Magnetos by Mr. George A. Lister; the Smith Radamax Plug Tester, by Mr. V. A. Trier; K.L.G. plugs by Mr. L. M. Braund; Aviation by Mr. A. W. Hulbert, etc. The lighter side is admirably catered for by a short story and Round Fenland, by Mr. P. J. Piggott, *ditto* Boswell and Johnson up-to-date. Roadcraft is certainly full of promise, and those who wish to make sure of their copies should see that their addresses are correctly recorded at Speedometer House, 179-185, Great Portland Street, London, W.1.

MESSRS. HANDLEY PAGE, LTD., announce new passenger and freight rates from June 14, 1920, as follows:—To or from Paris or Brussels—Passengers: Single fare, £10 10s. or 550 francs; return fare, £18 18s. or 1,000 francs. Freight: Up to 10 lbs., 2s. per lb.; over 10 and up to 30 lbs., 1s. 9d. per lb.; over 30 and up to 100 lbs., 1s. 6d. per lb.; over 100 lbs., 1s. 3d. per lb.; minimum, 5s. *Ad valorem* 1 per cent., including insurance, if not already covered by the consignor's or consignee's floating policies.

THE Paris Service (run in conjunction with Cie. Messageries Aériennes, Paris) will be run as hitherto, viz.:—Handley Page machines will leave Cricklewood Aerodrome for Paris on Tuesdays, Thursdays and Saturdays, at 12 noon. Breguet machines will leave Waddon Aerodrome for Paris on Mondays, Wednesdays and Fridays, at 12 noon. All machines return from Paris to London on the following day, leaving at 12 noon.

THE Brussels service will be run as follows:—Handley Page machines will leave Cricklewood Aerodrome every Monday, Wednesday and Friday at 12 noon, returning the following day, leaving Brussels at 12 noon.

TICKETS can be booked at all the usual agencies or at the Aerodromes. Each passenger is allowed 30 lbs. personal luggage free. Private cars convey travellers to and from aerodromes. All seats are numbered, and can be booked in advance.

CAPT. H. BARBER is now on a visit to Holland in the interests of the Aviation Insurance Association, whose business on the Continent is extending considerably both in volume and importance.

MR. D. C. HUTCHINSON, of Titanine and Aero Coverings, Ltd., will be a familiar figure missing from the forthcoming exhibition at Olympia, as he sailed for New York on the *St. Paul* on June 15.

A CIRCULAR just to hand from the Lepaerial Travel Bureau shows that the fare between London and Paris on the Royal Mail service run by Aircraft Transport and Travel, Ltd., has now been reduced to £10 10s. single and £18 18s. return. Those who wish to tour the battlefields will find the trip arranged by the Lepaerial Bureau a good one; it is certainly proving very popular.

IMPORTS AND EXPORTS, 1919-1920

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910). For 1910 and 1911 figures see "FLIGHT" for January 25, 1912; for 1912 and 1913, see "FLIGHT" for January 17, 1914; for 1914, see "FLIGHT" for January 15, 1915; for 1915, see "FLIGHT" for January 13, 1916; for 1916, see "FLIGHT" for January 11, 1917; for 1917, see "FLIGHT" for January 24, 1918; for 1918, see "FLIGHT" for January 16, 1919; and for 1919, see "FLIGHT" for January 22, 1920.

	Imports.		Exports.		Re-Exportation.	
	1919.	1920.	1919.	1920.	1919.	1920.
January...	555,989	2,323	57,571	32,752	—	697
February	453,822	9,320	57,972	68,932	—	—
March ...	704,424	2,092	72,716	67,600	400	—
April ...	97,662	5,918	25,433	148,484	—	—
May ...	136,631	761,425	38,428	237,627	—	400
	1,948,528	781,078	252,120	555,395	400	1,097

PUBLICATIONS RECEIVED

Aeronautics: A Class Text. By Edwin Bidwell Wilson, Ph.D. New York: John Wiley and Sons Inc. London: Chapman and Hall, Ltd. Price 22s. net.

Stunts. Aerofilms, Ltd., The London Aerodrome, Hendon, N.W. 9.

Catalogue

Modern Centrifugal Pumping Machinery. Gwynnes, Ltd., Hammersmith Iron Works, London, W.6.

AERONAUTICAL PATENTS PUBLISHED

Abbreviations:—cyl. = cylinder; I.C. = internal combustion; m. = motors

APPLIED FOR IN 1917

The numbers in brackets are those under which the Specification will be printed and abridged, etc.

Published June 17, 1920

3,507. A. A. D. LANG. Aerial propulsion. (143,274.)

APPLIED FOR IN 1919

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

Published June 17, 1920

3,707. J. A. STEWART. Driving-mechanism for aircraft. (134,420.)

3,892. W. B. STOUT. Aeroplanes. (143,299.)

4,262. F. BAKER. Parachutes. (143,317.)

7,564. H. BLACKBURN. Parachutes. (143,348.)

11,367. J. REID. Forming and producing of signals, advertisements, etc. in the air from aircraft. (143,380.)

13,386. SPERRY GYROSCOPE. Gyroscopic compasses. (139,142.)

18,711. A. BERNINI. Apparatus for recognising and communicating with aircraft by acoustic means. (130,605.)

If you require anything pertaining to aviation, study "FLIGHT's" Buyers' Guide and Trade Directory, which appears in our advertisement pages each week (see pages xxii, xxiii and xxiv).

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